# The Builder.

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### *The Episcopal Heraldry of England.*

OUR cathedrals appeal to many tastes and sympathies as the happy hunting-grounds of the architect, the antiquary, the artist, and the religious enthusiast, while the student of heraldry finds in them an almost inexhaustible field of research. The arms of the Sees are closely connected (in many instances) with English history, and are of interest to the lover of armoury. A short account of the origin of some of these arms or the causes for their adoption, with the meaning of the various devices, may be of interest to ecclesiological and other readers.

The See of Canterbury claims first attention, as its archbishop takes precedence of all peers of the realm who are not of royal blood.

It was founded in 596 by Saint Augustine, and at that time formed the capital of the kingdom of Kent under Ethelbert. Formerly it had jurisdiction over the Irish Sees, but precedence over York was not assumed until 1073 by a grant from the Pope. The arms are "Azure: an episcopal staff in pale argent ensigned with a cross patée or, surmounted by a pall of the second, edged and fringed of the third, and charged with four crosses formée fitchée sable." From the episcopal staff to the four crosses fitchée this is a truly typical coat of the Church, but the pall is the most conspicuous and historic of the bearings, being a vestment specially granted by the Pope for the use of archbishops, but not without a suitable return in the shape of a considerable sum of money. It is made of wool shorn from the backs of the sacred lambs of St. Agnes in Rome. In shape it is a circular strip worn round the shoulders, and with a strip of the same material hanging in back and front and forming a Y on each side, said to symbolise the life of man, the upright limb showing his childhood, and the two branches the right path and the wrong one, one of which he must follow. The staff with the cross-head is usually considered as peculiar to an archbishop and distinct from the crooked-head pastoral staff of the bishop; but there is just a shade of doubt on the point, and at this we leave the question.

A cross fitchée (or with spiked lower limb) was carried by palmers and pilgrims, and formed at once a support on the road and an emblem for devotion when the hour came, and was stuck in the ground for that purpose; but in the arms of Canterbury it is supposed to represent the pins by which the pall was fastened to the archiepiscopal vestments.

We may add that the practice of ornamenting the mitres of archbishops with ducal coronets is a modern one, and without the sanction of the College of Arms, but at the same time it is a very convenient one as a distinction of status, and likely to be continued in spite of its non-heraldic character.

York is the most ancient of our archbishoprics, dating from the very introduction of Christianity into England, and as early as the second century, and formerly the Sees of Scotland acknowledged allegiance to it.

In the reign of Henry I. arose that fierce contest for supremacy between Canterbury and York, and which lasted for so many years and was finally settled by the Pope declaring in favour of the former, but allowing the Archbishop of York the title of "Primate of England." The present arms are "Gules: two keys in saltire argent, in chief regal crown proper." The keys allude to St. Peter, to whom the minster is dedicated. The date of their first assumption is doubtful, but the former arms were the same as those of Canterbury. It is said that the change in the shield was brought about by Wolsey through his jealousy of the rival see of Canterbury, but what evidence there is on the point tends to discredit the assertion.

London, in early British times, was the principal of three archbishoprics, but St. Augustine, in 596, reduced it to a bishopric, amongst which it is now the chief. Its arms are, "Gules: two swords in saltire, hilts argent, pommels or." The cathedral being dedicated to the Apostle Paul will explain the two swords it bears as the well-known emblem of that saint.

The Bishop of Durham claims precedence next to his brother of London. The See was originally seated in Holy Island, or Lindisfarne. It was thence removed to Chester-le-Street, and then to Durham, in the last decade of the tenth century. Its bishops were Earls of Sedbergh and Counts Palatine, as is indicated by their mitres being represented rising from a coronet, and formerly adorned with plumes, and in one instance surmounting a helmet (the seal of Bishop Hatfield).

This combination of the "lords temporal and spiritual," or ecclesiastical and princely dignity, is of rare occurrence in England, and in 1836 the palatine jurisdiction of the See of Durham was vested in the Crown by Act of Parliament, and separated from its episcopal holders after a connexion of twelve centuries. The arms of the See are, "Azure: a cross or between four lions rampant, argent," and are those ascribed to King Oswy, its Saxon founder.

Winchester Cathedral has been dedicated at different times to various saints, originally to St. Amphibalus, afterwards to St. Peter, and lastly St. Swithin. The bishop, as prelate of the Most Noble Order of the Garter, has precedence next to the Bishop of Durham, and surrounds his arms with the insignia thereof.

The arms of the See are, "Gules: two keys endorsed in bend and rings interlaced, the upper one or, and the lower one argent, between them a sword in bend sinister of the third, hilt and pommel or." The two keys refer to its patron saint, Peter, and the sword may be supposed to be a type of the sword of the spirit.

The bishopric of Oxford is of comparatively modern foundation, owing its existence to Henry VIII. Its holder, as the Chancellor of the Most Noble Order of the Garter, adorns his arms with that illustrious ensign, like his brother of Winchester. The Royal Chapel of St. George now belongs to this See, being transferred from Salisbury, whose bishops were the original chancellors of the order.

The arms are very singular and blazoned. "Sable: a fesse argent, in chief, three demi-ladies couped proper and ducally crowned or, vested of the second: in base an *ox* of the last, horned and hoofed gold, passing a *ford*, barry wavy of five, argent and azure." The punning arms of the city form the base, and it is suggested that the three ladies' heads in chief were formerly those of kings referring to the Royal founders of the University, as the arms of the latter contain three crowns,—a probable solution to the enigma.

A still greater enigma is to be found in the old blazonry of the See of Chichester, founded at Silsey in 681, and removed to the former place in 1071. It runs as follows:—"Azure: a Prester John seated on a tombstone, in his left hand a mound, and his right hand extended or, with a linen mitre on his head, and in his mouth a sword all proper." This was gravely recorded at the College of Arms, and passed muster until very recently, when the figure of Our Saviour took the place of the mythical John, and gave the solution of the incongruous mystery, being, in fact, the restoration of the arms adopted by Bishop Seffrid II. as the seal of his See. This is perhaps one of the strangest perversions of a clear and appropriate "coat" that can be met with. We now find it properly recorded as,—"Azure: Our blessed Saviour, head radiant, seated on a throne or, cushioned gules, vested argent, girdled of the second, dexter arm elevated proper, issuant from his mouth fess-wise in the sinister a sword proper, hilt and pommel gold in fesse, on the dexter Alpha, and on the sinister Omega of the last."

The sword issuing from the mouth refers to

several passages in the Revelations, and is quite in accordance therewith, but to some minds the idea of treating the Saviour as a charge in heraldry will be objectionable, and even painful, and we must confess our sympathy is to some extent in the same direction.

Lincoln from its great height surveys the country round (a combination of the ancient sees of Dorchester and Sidnacester), and became a bishop's seat in 1075, and subsequently the arms became :—"Gules : two lions passant guardant in pale or, on a chief azure the Virgin ducally crowned, seated, on her dexter arm the Infant Jesus, and in her sinister hand a sceptre, all of the second."

The arms are those usually attributed to the Conqueror, in whose reign it will be seen Lincoln became a bishop's seat, but Woodward thinks their origin is rather to be found in the fact that Geoffrey Plantagenet occupied the See from 1173 to 1182. If this is so, we get an early record of the Royal Arms in Church heraldry, and on that account of great historic interest. The figure in the chief reminds us that the cathedral is dedicated to the Virgin Mary, and forms another instance of mingling sacred subjects with things mundane.

The See of Bath and Wells derives its double title from the fact of the seat of its bishop having been transferred several times from one city to the other, and that the monks of both places joined in his election. The arms of the united See are now, "Azure : a saltire quarterly, quartered or and argent."

The cathedral at Wells is dedicated to St. Andrew : hence the saltire, or X-shaped cross, on which the saint was supposed to have suffered martyrdom. The arms of Bath were, "Azure : two keys, endorsed in bend, sinister, argent and or, with a sword in bend proper." Early in the seventeenth century the saltire of Wells was placed between the sword and keys of Bath by Bishop Montagu.

Gloucester and Bristol form another united diocese in the West, and have done so for just half a century. Both Sees were created by Henry VIII. in 1541. The arms are combined in one shield as follows, "Azure : two keys endorsed in saltire, or," for Gloucester ; impaling, "sable, three ducal coronets in pale of the second" for Bristol.

The abbey church at Gloucester was formally dedicated to St. Peter, and afterwards to Peter and Paul, and the arms now borne refer to the first dedication; but formerly the sword of the latter saint was added, and still appears in different parts of the building, also on the bells and the seal of the convent.

The derivation of the arms for the Bristol See is unknown, but Woodward conjectures that the three crowns may refer to the Blessed Trinity, in accordance with the dedication of the cathedral, and he adds that the same charges appear in an old stained-glass window, but upon a field azure.

The Sees of Devon and Cornwall became united in 1032 under the name of Exeter, but to be separated in our own day to form another distinct diocese for the former county with the cathedral at Truro. The arms of Exeter are, "Gules : a sword erect in pale argent, hilted or, surmounted by two keys, endorsed in saltire of the last," and have reference to the former dedication to Peter and Paul. In Henry VIII.'s time his favourite, Bishop Vesey, held the See, and it may be of interest to mention that this venerable prelate attained the great age of 103, and was buried in his native place, Sutton Coldfield, and is generally believed to be the only representative of the episcopacy who has found a grave in Warwickshire.

The See of Worcester was founded by a king of Mercia in the latter part of the seventh century (Ethelred); its arms, "Argent : ten torteaux, four, three, two, and one," are supposed to be derived from those of Jules de Medicis, who held it for a short period early in the sixteenth century, and have nothing symbolical in them.

It is, perhaps, worth recording as a very singular coincidence that the paternal arms of Babington (its bishop from 1597 to 1610) were exactly the same as those of the See.

The See of Hereford was formerly suffragan to the Welsh archiepiscopal diocese of St. David's, but with the spread of Saxon sway it passed to that of Canterbury. The arms are,—"Gules : three leopards' faces reversed jessant-de-lis, two and one, or,"—as borne by St. Thomas de Cantilupe, its bishop from 1275 to 1282, and, like those of Worcester, hardly suitable for the purpose, however historic in themselves.

Lichfield for a brief period enjoyed the dignity of an archbishopric, and for some time held the double title of Coventry and its own. It was founded by Oswy, king of Mercia, in 656. It arms, "Per pale gules and argent, a cross potent, quadrated between four crosses patée, all counterchanged,"—form a very striking coat, from the contrast of colours, but the origin and meaning are unknown. This cathedral possesses a large stained-glass window in the choir filled with the arms of its bishops and the sees they were translated to, forming a perfect blaze of episcopal heraldry, and a striking and appropriate spectacular display, and worthy of imitation. Bishop Selwyn is buried here, and that beautiful constellation the Southern Cross forms the device of the arms for his New Zealand see, adorning the mortuary chamber with other records of Australasian life.

The See of Sodor and Man formerly included the Hebrides (or Southern Isles) in its jurisdiction, and although the connexion has been severed for centuries the joint names are still retained. The arms are peculiar and unique: "Gules between two pillars ; argent, the Virgin Mary standing on the upper part of three ascents with arms extended, vested proper and crowned or, around her head a nimbus of the last over dexter pillar, in fesse a church proper and in base three legs armed proper, conjoined in fesse at upper part of thigh, flexed in triangle, garnished and spurred or." Woodward is of opinion that the Virgin should hold the church, and that the pillars only form part of the canopy under which saints and bishops so often appear on seals.

The three legs so characteristic of the Isle of Man Planché supposes were derived from the Normans, as the Island reminded them of the triple-mountained Sicily whose arms are also three legs, but unclothed.

As the Manxmen are in the enjoyment of "Home Rule" with a Parliament of their own, their bishop has no seat in our House of Lords.

## SHADWELL HOSPITAL COMPETITION.

SOME months ago, the Committee of the Children's Hospital at Shadwell advertised a competition for a large addition to the hospital, utilising a strip of ground to the north of the existing buildings, at present occupied by some disused almshouses, and which has been acquired by the Committee. Mr. Saxon Snell was commissioned to report and adjudicate on the plans sent in, and after a rather long delay this has now been done, and the designs, or most of them, have been exhibited at the hospital during three days of this week.

Mr. Snell has "placed" four sets of plans, signed respectively "Sunshine," "Thought," "Simplex," and the fourth set being marked by a circle in the corner, the designs being placed by him in the order named. The additions to be made consisted of two new wards, one above the other ; a casualty ward, to be near the street entrance and near the existing administrative portion of the hospital ; a large waiting-room for out-patients, and a smaller waiting-room for new out-patients attending for the first time ; two isolation wards, to be near the new patients' waiting-room and near the street ; two consulting-rooms ; and a dispensary, to be accessible both from the old and new portion of the hospital, in place of the present dispensary, which is too small. To this was added a complete new laundry on the top floor, and provision for the raising of the main block, and the addition of a third ward at a future time, if required. This does not seem a good way of putting it, as this would of course necessitate the demolition of the new laundry, or at least the changing it into a ward, and moving the laundry to the upper story ; in other words, planning the laundry so that it could be turned into a ward afterwards. This unnecessary difficulty interposed seems, however, to have been tacitly ignored as a thing that might be postponed to a more convenient season.

The plans placed first are, as we have already stated, by Messrs. Millard & Lewis ; the names of the other three competitors who have been placed are still officially kept secret, for no reason that we know of, as we presume the authors can have no objection to their being made known.

The peculiar shape of the ground, a long and narrow piece, and the general requirements, as issued to competitors, have led to a considerable unanimity in the general arrangement of the plans, all of them having a passage of access along the north side of the buildings, and placing the out-patients' waiting-rooms parallel to this, with the wards over the larger waiting-room. The difficulty in the plan consists in arranging all the rooms required within the space, which is barely sufficient for them, and at the same time getting sufficient inter-communication and avoiding an unsanitary crowding up of the ground. The latter condition is really hardly possible ; the selected four can only be said to have come more or less near fulfilling it. All of them appear to us to have been (considering the matter from a purely hospital point of view) too much impressed with the wish to produce a good street front on the main (west) side by carrying on the architectural design of the existing hospital (a poor quasi-Gothic affair, neither good architecturally nor suitable for a hospital), thereby blocking up the site much more than need have been.

The plan by "Sunshine" is in the main the best, but the authors have got out of one difficulty by ignoring the instructions as to the size of the consulting-rooms, and have made them a good deal smaller than specified in the instructions. It is not a very important defect, for the specified size, 20 ft. by 20 ft., is rather unnecessarily large. The provision of separation-lobbies between them and the waiting-rooms is a good point. The water-closet wings are not sufficiently cut off from the wards, having a window to the open-air on one side of the lobby only, consequently there is no cross draught. The consulting-rooms, one for medical and one for surgical cases, ought by rights to have been equally accessible from both the waiting-rooms, though the instructions give no information on this point ; the promoters apparently thinking, like other medical authorities who promulgate hospital competitions, that architects are to find out by intuition their method of working their establishment. The inlet ventilation of the wards is by air introduced vertically through the window-boards after passing hot-water coils in the recesses under them : as good a way as could be. The exit of foul air is through the ceiling, but where it goes after that the drawings alone do not make clear, and the architects' reports were not appended to the drawings, as in justice to the authors they should have been. We made inquiry on this head, but got no reply except a curt statement that the architects "had expressed no wish to have their reports appended." Probably they supposed that common-sense would have dictated to any committee or secretary that if the drawings were exhibited for public inspection, the authors' descriptions should go with them to explain them, as has been done in every competition exhibition we ever heard of ; but Shadwell Hospital seems to be strictly tied up in red tape, and the most reasonable thing cannot be done without an official order. The enclosed court surrounded by buildings, just in rear of the street block, is very small, and a point of danger in the plan, though this is much worse in one or two others of the designs.

In "Thought" the planning of the out-patients' department and the lobbies communicating with the dispensary and the consulting-rooms is very good ; ample inlet

ventilation is provided by large iron tubes, circular in section, opening vertically into the wards and other rooms. There is a large extract or exit ventilator with louvres in the roof, but whether it is actuated by any special means is not indicated on the drawing. Ventilating grates are used in the wards.

"Simplex" has attained simplicity in part by making his out-patients' waiting-rooms far too small for the number they are to contain; in fact they would not hold the numbers in any comfortable or wholesome manner at all, and there are internal courts or funnels surrounded with building that are very small and would be receptacles of foul air. There appear to be air-inlets near the floor, as shown on the longitudinal section of the ward, but, as in other cases, the working of the ventilation system is not clearly apparent from the drawings.

"Circle" places prominently a special note on his plans,—"All w.c.s entirely disconnected from main building by open lobbies,"—as if this were a new invention, instead of, as it ought to be, a kind of truism in hospital planning; and another note placed against some gratings near the ceiling in the section of waiting-rooms, "openings giving ventilation to waiting-rooms," leads to the conclusion that the author is tolerably unsophisticated in these matters, or he would have stated or shown whether these were inlets or outlets, or how he meant them to work. We ought to be getting rather past the times when architects thought it enough to cut a hole in a wall or a ceiling and label it "ventilator." The laundry plan shows also a want of practical knowledge; the washing-room is much too small, and the drying-room much too large, and merely a large room with no drying-horses or drying-closets shown at all. Indeed, we can hardly see why this plan was placed, unless for the perspective view, which is a large and bold one.

A cursory look at the remaining designs would suggest that there are one or two among them better in most respects than the fourth placed one, accompanied by some very poor and absurd ones. But we think the best plan has been chosen, though "Thought" runs it very close, and is more business-like in some respects. If we have not done justice to the authors' intentions in regard to heating and ventilation they must put it down to the absurd action of the authorities in keeping the architects' own explanations of their work carefully out of sight.

## NOTES.

THE detailed accounts of the Panama Canal, of the general outcome of which we gave an abstract last week, are published in the *Bulletin du Canal Inter-océanique* of August 1, in the usual form of the *inventaire général*, as well as an abstract in the report itself. The mode of dividing the cost into *dépenses faites pour la construction du canal*, and *actif suivant estimation*, is not one which commends itself to the English reader, and it is necessary to refer to previous accounts in order to understand that rendered on June 30 ult., which only comes down to June 30 in the previous year, 1885. As such it may be massed as follows:—

*The Company Debtor (Passif).*

| | |
|---|---|
| To Share Capital | £12,000,000 |
| To Loans, three emissions | 23,825,840 |
| To Interest and Sundries | 788,976 |
| Total | 36,614,816 |

*The Company Creditor (Actif).*

| | |
|---|---|
| By Purchase of Panama Railroad | £3,755,128 |
| By Financing, Management, Interest, and Payments to Concessionnaires | 16,794,935 |
| By Hotel and Furniture at Paris, and Buildings and Furniture at Panama | 1,015,445 |
| By Plant and Stores | 2,831,968 |
| By Works and Management (Panama) | 3,524,447 |
| By Cash and Realisable Assets, less acknowledged Debts | 8,692,893 |
| Total | £36,614,816 |

In the above the expenses of management at Panama are included with the cost of the works. The cost of the "central management" is 66,136*l.* per annum. Out of a total expenditure, including rebate on loans, of 27,921,923*l.* (to June 30, 1885), only 3,524,447*l.* has been expended in works and local management. The salary of the Director General is stated by M. Rodrigues at 20,000*l.* a year, besides house, horses, and carriages.

THE Cambrian Archæological Association, which meets at Swansea on August 23, is not likely to want interest during its five days' wanderings in a district so unusually full of architectural and archæological remains. The first day's excursions will include Margam, the seat of Mr. Talbot, M.P., in whose grounds is the ruined chapter-house of the ancient Cistercian abbey founded by Robert of Gloucester in 1147. The west end of the abbey church forms part of the present parish church. Contemporaneous with Margam, and, indeed, the work of the same architect, is Neath Abbey, which, defaced and begrimed as it is by copper smoke, still deserves Leland's description as "the fairest abbey in all Wales." The Peninsula of Gower, which will occupy the three last days of the meeting, is in itself an *embarras de richesse*. In North Gower are the castles of Webley and Llandymor, the famous cromlech of Arthur's Stone, dominating the country from the summit of Cefn Bryn, the churches of Llanrhidian and Llangenydd, the latter with a peculiar side tower and blocked Romanesque arch, the maenhir of Samson's Jack on Manselfold farm, and the camp on Harding Down. South Gower has its bone caves (some of which have yielded very early pottery), Oxwich church and castle, Penrice and Pennard castles, the churches of Ilston and Bishopstone, the Court-house of Landgrove, and the chamber-tumulus of Park-le-Breos. Swansea, with Bishop Gower's castle, St. Mary's Church and monuments, the Hospital of the Blessed David, and a visit to Mr. Llewellyn's charming seat at Penllergare, will furnish ample materials for a long and interesting day's research.

M. DEPREZ'S experiments on electrical motive power, which have now been carried on for some time at Creil at the expense of Messrs. Rothschild, seem to be in a fair way of bearing important fruit. According to the results, it appears that M. Deprez can, with only one generator and one receptor, transmit to a distance of thirty-five miles a force of fifty-two horse-power, and that the machinery is now working regularly and continuously. The maximum electro-motive force is 6,290 volts, though prior to the construction of M. Deprez's apparatus, the maximum force did not exceed 2,000. This is a high rate of tension, though, to judge by the experience of the past six months, it does not seem to be attended with danger, no accident of any kind having arisen; and it is perfectly feasible to leave the transmitting wires uncovered on poles, so long as they are sufficiently high to be out of reach of the hand. The cost of a circular line of seventy miles for a fifty-horse power of transmission is estimated at about 5,000*l.*, though this price would be much diminished if the machines were frequently constructed. It seems probable that a new and very practicable motor power will shortly be available for industrial purposes.

THE seventy-fifth section of the Metropolis Management Amendment Act, 1862, says that an order of a magistrate for the demolition of a house or part of a house shall be made "in writing on" the owner who is directed to take the building down, and that the work shall be done within such time as the justices shall consider reasonable. In the case of Barlow *v.* The Kensington Vestry, to which we have more than once referred, it appears (from the now printed report of the case in the House of Lords) that no such written order was ever seved on the owner of the house, but that a copy was served on him, or came to his knowledge. However, eight weeks were allowed for the demolition of the building, and the order only came to the house-owner's knowledge on the last day of this period. Apart, therefore, from what may be called the merits of the case, on which the House of Lords decided against the Vestry, this tribunal considered that there had been no valid service of the order, which should have been in writing and served on the house-owner at once. Thus said Lord Watson, "in that view no time whatever was allowed for implementing the order to demolish, and that circumstance itself would be sufficient to vitiate the order." It is obvious, therefore, that local bodies should watch carefully the procedure under this Act, or they may, even when they are in the right on the merits, waste public money by irregular proceedings.

THE Institute of Architects have prepared, as proposed some time since, a card intended to facilitate the access of members to notable buildings for the purpose of sketching or examination. The card requests "all those whom it may concern to allow Mr. ——, whose signature is on this card, and who is travelling for the purposes of architectural study, to sketch, measure, or otherwise examine any ancient or notable buildings or monuments under their charge, and to afford him such reasonable facilities and assistance as may lie in their power." The card is stamped with the seal of the Institute, and on the back is a translation into French, German, Italian, and Spanish.

THE Court of Appeal have settled a point of some interest to communities which supply their own water and are not supplied by a private company. For in the case of the Dewsbury Waterworks Board *v.* The Assessment Committee of Penistone Union, the Court has decided that where a public Waterworks Board is empowered to raise the funds for supplying a district with water by means of water-rents, and is also empowered to levy rates in order to make up any deficiency which may occur from the rents being insufficient, this rate is to be taken into consideration in estimating the rateable value of the property of the Waterworks Board. Clearly the power to levy such a rate in aid, and the fact that it had been employed, is an advantage which the hypothetical tenant would consider in estimating what he would give for the property.

THE Wiltshire Archæological Society, at their annual meeting at Swindon on the 10th, took into consideration the condition of Stonehenge, and the desirability of protecting it by a sunk fence so as to exclude carriages, and the appointment of a caretaker, who should only admit people under proper regulations. Though such an ordination would deprive "the stones," as they are called in the district, of part of their effect as they now stand unfenced in the midst of the plain, we can well understand, from what we have seen going on there, that some such measures may be absolutely necessary to preserve this most remarkable of English antiquities from defacement and injury. Rabbits also, it is reported, are doing serious mischief in burrowing near and under the stones, and loosening the ground they rest on. The deputation who had been appointed by the Society to visit and report on the subject also advocated the restitution into its original position of the trilithon which fell in 1797, the former position of which was, it was said, accurately known. We are rather doubtful about this. Unless the position can be absolutely fixed, it seems better to leave them as they fell to tell their own tale. But we hope something definite will be done to protect this mysterious relic of the remote past from being made the mere playground of careless and vulgar holiday crowds, as it is more and more becoming.

THE Edinburgh University, designed by Robert Adam, remains incomplete, the dome which he intended as its culminating feature never having been erected. Some years ago the money required to effect this addition to the building was left by the late Mr. Robert Cox, Writer to the

Signet, and to Dr. Rowand Anderson has now been entrusted the carrying out of this improvement. From the position occupied by the building this additional feature in the skyline will be an effective element in the views of the Old Town as seen from different points, and when the campanile of the medical class-rooms appears (which it is said there is some likelihood of its doing through the munificence of one of the city's newly-elected Members), the group will have somewhat of a Venetian character. The northern façade of the University originally formed one side of a narrow lane, and is comparatively plain as regards decorative features; it is, however, symmetrically designed, and has a character of its own possessed of considerable dignity. It has been proposed to decorate this frontage, which is now conspicuous by the opening out of the broad thoroughfare of Chambers-street. We are inclined to the opinion that it would be well to let the façade remain as it is to tell its own tale. The money which would be spent upon applied ornament could be better appropriated to different objects connected with the University, æsthetic or otherwise.

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AT a meeting of the Building Committee for the University College of Wales, held on July 29th, a letter from Mr. Lewis Angell was read, stating that at 7d. per foot cube, the least price at which buildings of such character could be constructed (quite the least, we should say), the design awarded the first prize in the competition would cost 23,875*l.*, the second 21,253*l.*, and the third 23,022*l.* A long report was then read by Mr. J. P. Seddon, the original designer of the building which had been partially destroyed by fire, undertaking that it could be rebuilt on the original site, in a satisfactory manner, at a cost not exceeding 17,500*l.* It was found that the two most eligible sites available in Aberystwith for entirely new buildings had an inclination of 1 in 5 and 1 in 6 respectively, a circumstance which it was considered would render them undesirable for the purpose, and would considerably increase their estimated cost. On this, after some discussion, the Committee unanimously resolved that the building should be reconstructed on its present site, and that Mr. Seddon be invited to prepare complete working drawings, and to obtain trustworthy quantities from an independent professional surveyor, with the view of obtaining from a responsible builder an undertaking to carry out the work for a sum not exceeding 17,500*l.* Pending this, at all events, Mr. Seddon is re-instituted as architect for the re-building of the College, and, we hope, will carry it out as proposed. His original building was a remarkable one in many points, and there ought not to have been any attempt to shelve him in the matter.

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WE have received a pamphlet by Mr. Butterfield on the question of the provision of convenient accommodation for kneeling in church.* The object is to advocate the general employment of a fixed kneeling-board, forming part of the seat construction, in preference to loose hassocks and kneeling-pads. The latter are objected to as holders of dust and dirt, wearing out very soon, and requiring a constant eye on them and re-arrangement of them after services, so that each one should be in place for the next service. A section of the seat with kneeling-board is appended, with measurements figured, and the Incorporated Church Building Society recommends the general use of this arrangement, a full-size section of which can be seen at their office at 2, Dean's-yard, Westminster. This small but not unimportant matter in connexion with church furnishing is very practically treated, and we recommend attention to it on the part of those concerned in building new churches. There is no doubt that such an arrangement tends to render a church more cleanly and orderly than strewing the floor with a multitude of hassocks.

* Church Seats and Kneeling Boards. By W. Butterfield, F.S.A. With an Appendix, by Richard Foster, one of the Vice-Presidents of the Incorporated Church Building Society. Rivingtons. 1886.

MUCH difference of opinion exists amongst the subscribers as to the shape which the Memorial proposed to be erected in Edinburgh to the late Sir George Harrison, should take. The Town Council have come to the conclusion that a stained-glass window in St. Giles's Cathedral would serve the purpose; but it is contended that Sir George had little of the ecclesiastical element in his composition, and that a more suitable memorial would be a monumental gateway at the entrance to Blackford Hill, which he was the means of procuring as a public park, or the acquirement of Corstorphine Hill for the use of the public, a scheme he is said to have favoured. While the Town Council entertain the idea of a Memorial to Sir George Harrison, in St. Giles's Cathedral, they have come to the conclusion that the Memorial to the late Dr. William Chambers, who restored that edifice, should not be erected within its walls, as originally intended, but should consist of a statue to be erected in Chambers-street. Would not a recumbent statue in the cathedral be more appropriate?

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A MEETING of ladies and gentlemen was held at the rooms of the Liverpool Architectural Society, on Wednesday last, to consult for the formation of a Liverpool Art-Workers' Guild, at which the following resolution was passed:—"That, in the opinion of this meeting, the establishment of a Liverpool Art-Workers' Guild is desirable, with a view to the diffusion of sound principles of decoration, and to the encouragement of workmen and others desiring to undertake decorative work of all kinds." A provisional council was afterwards formed to consider the way in which the resolution could be best carried into effect. The general object of the guild seems to be to find good art-workmen, and to bring them into relation with those who require their work, and also to form a collection of good examples of decorative work of various kinds. The best result of this kind of effort, perhaps, is that it tends to break down the influence of the middleman, or art-tradesman, who gets things made by routine, and stamps the name of a "Co." on what should be the individual art-workman's production. Mr. Bare, who made the principal address on the occasion (a very good one) observed that when looking over the pattern-books of a large firm of calico-printers he was assured that the ugly patterns sold quite as well as the undoubtedly pretty ones. We have no doubt they do; but will an Art-Workers' Guild alter that state of things materially? We fear not. It will be joined first by those who already know good art from bad, and they will catch a few of the heathen and convert them from a bad fashion into a good one; but hardly more. They may, however, benefit the true art-workman and find him more employment and a more sympathetic public.

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IN a letter to the *Times*, Messrs. G. Clausen, Walter Crane, and Holman Hunt have formulated the idea which has probably been in the minds of a good many people for some time past, that the Royal Academy on its own showing is really a private body, and had better be left to hang the works of its own members and enjoy them in private, and that a truly "national" exhibition should be started on a wider basis. More easily said than done; but the Academy as a whole certainly seems in a rather hopeless state of dotage and self-complacency, in spite of the efforts of its President to rouse the members to a higher view of their responsibilities. This year's exhibition has undoubtedly damaged their repute very seriously with "those who know," but this does not affect the success of the exhibitions with the mass of the public, who reason the inverse way, and think a picture is good because it is by a Royal Academician. An amusing sequel to the affair was the extra letter of Mr. Hunt to the *Pall Mall Gazette* the day after, in which he suggested that Mr. Burne Jones's painting of the "Mermaid and her Victim" was really an allegory referring to the Royal Academy and the painter himself, caught at last in their toils. If this is not true, it is at any rate *ben trovato*.

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WE are sorry to find that a common colloquial phrase which we used the other day, to the effect that the Board of Works "would not fill Mr. Vulliamy's shoes" from among the list of candidates for the vacant office has been very absurdly construed in some quarters as implying some kind of insult to the collective candidates in a sense which we could not possibly have intended, and which the words do not bear. To say that A "will not fill B's shoes" is an old English metaphorical expression, merely meaning that he is not of equal abilities with B: nothing more. Our position was simply this: that, considering the important influence over London improvements which the Architect to the Board of Works may exercise, and the desirability of securing the rather unusual combination of architectural taste, practical knowledge, and administrative ability, in the same person, the list of candidates was a decidedly weak one; and we think so still. But we are very sorry to think that the chance use of an off-hand phrase should have been misinterpreted in a sense which it was never for a moment intended to bear.

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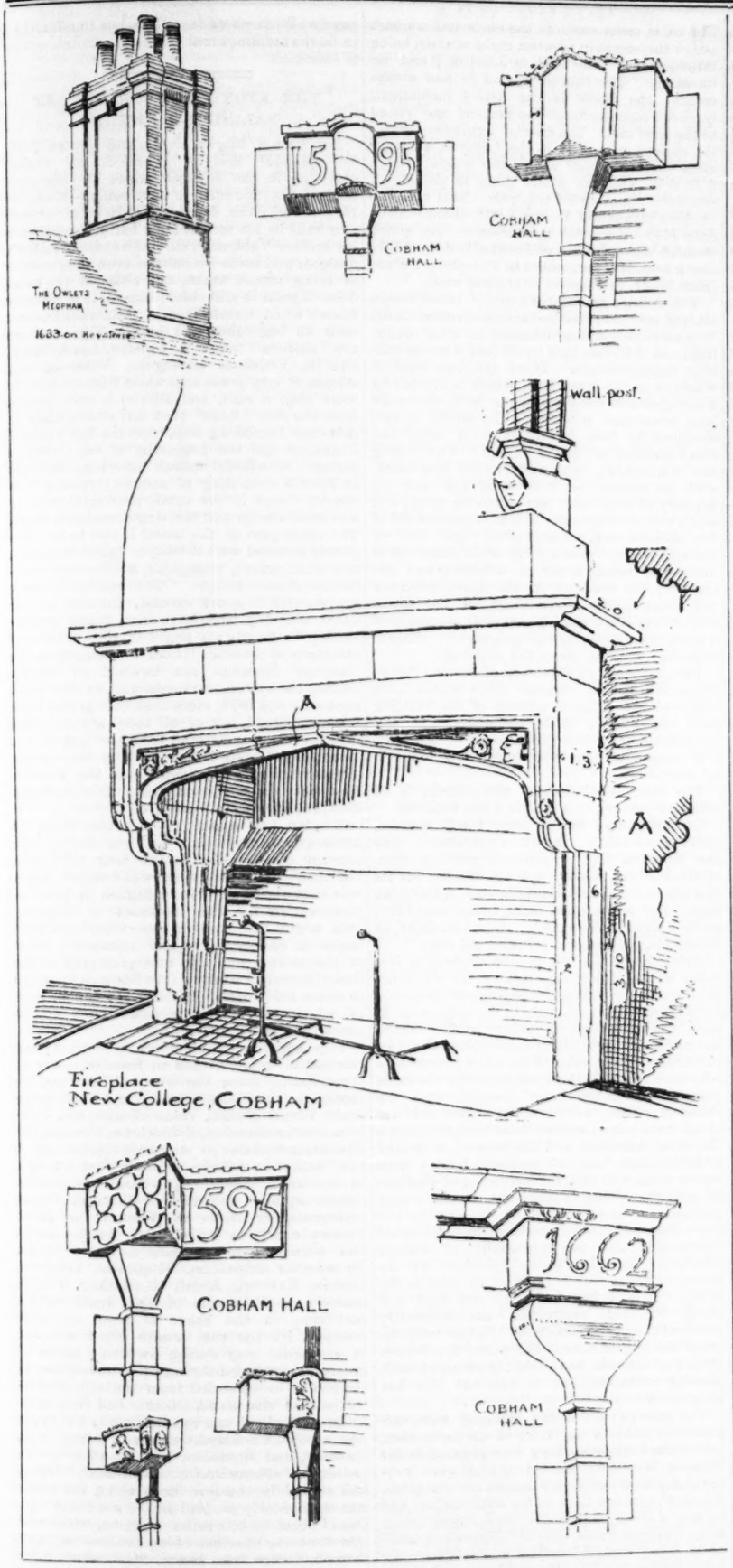
## NOTES IN KENT,

### WITH THE ARCHITECTURAL ASSOCIATION EXCURSION.

THE members of the Architectural Association met for their annual excursion on Monday at Malling, Kent, for a tour to last the week, as usual, and to include the following places: Malling Abbey, Rochester Cathedral, and Cobham Mansion and Church; Maidstone, Allington, Aylesford, and East Malling; Penshurst and Tunbridge; Boughton Place, Sutton Valence, Little Charlton, Leeds Castle, and Hollingbourne; Leybourne, Birling, Wrotham, and Ightham. The following are a few notes by the way:—

Few things are more fascinating to the student of our old domestic architecture than to puzzle out the meaning of inscriptions and emblems which the builders of those days so freely lavished on their work. The emblems always have some *raison d'être*, although, especially in matters heraldic, they are occasionally so ruthlessly torn from their surroundings as to be not a little confusing. Patience, however, and a careful study of the family tree, particularly if illuminated with coats-of-arms, will generally triumph in the end. At Cobham, for instance, the leaden spout-heads (see sketches) have nearly all some inscription upon them, and a few have devices of meaning obscure and dark till the builder's coat-of-arms has been examined. Then it becomes clear that these devices are "charges" from the various quarterings, reproduced with absolute disregard to such essentials as the bends or chevrons, and so forth, which gave them their meaning in the original shield. The initials, too, unless one knows something of the family history, have a tendency to disconcert the inquirer. Sir William Brooke, Lord Cobham, being the builder, the initials W. C. (for William Cobham) are not difficult to account for. But what are we to say to W. C. F.? Another spout helps us. It bears W. C. and F. C., and inquiry shows that Lord Cobham's second wife's Christian name was Frances. It was, therefore, during the *régime* of the second wife that the house was built, and W. C. F. is a sort of monogram of William and Frances Cobham. Tombs are often of the greatest use in solving these problems, since they nearly always display a good deal of heraldry. The tomb in Cobham Church of Sir George Brooke, Lord Cobham, the father of Sir William, the builder, is a case in point. It glistens with heraldry, every child of Sir George being represented by a kneeling effigy, and every effigy being clad in a coloured coat-of-arms. The work of this tomb is very striking; Sir George and his lady lie on the top in the olden fashion, not reclining under an arch, or on a sarcophagus, in the stiffest of attitudes, with the hand under the cheek as if seeking a grim repose, but lying supine, as their fathers and mothers lay. Round the tomb is a series of shallow niches, before each of which kneels a child of Sir George, headed by the very Sir William to whom we owe the mansion and




the almshouse adjoining the church. A long inscription sets forth the worth of the deceased with many *sesquipedalia verba*; it bristles with such epithets as "honoratissimus," "clarissimus," "laudatissimus," "præstantissimus," "sapientissimus," and the like, and the world seems to have lost one of its noblest products when Sir George Brooke breathed his last. The brasses of the earlier Cobhams are a very fine series, and among them is one to Joan de Cobham, the last of the first race, who carried the estates to her five husbands in succession. Close to the church is the almshouse before mentioned, in the spacious quad of which old women with sticks and old men with green-shaded eyes stand, anxious "to be took," by those who are sketching the quiet, pleasing buildings. In the large hall is a good fireplace, with a hood carried on corbels, one of which bears an inscription, which some read as a date and some not, but which the old warden stoutly avers to be the date of the building,—eleven hundred and something. Not far from Cobham, and on the way to Meopham, stands "The Owlets," a quiet unpretending house of red brick, with some good solid chimneys dated 1683, and a good plaster ceiling over the stairs dated 1684.

At some distance from Cobham, in a bend of the River Medway and about half-way between Maidstone and Aylesford, stands the ruined Castle of Allington. Its chief interest lies in its connexion with the Wyatt family to whom it belonged early in Henry VII.'s time. Sir Thomas Wyat, the poet, was born here; and it was his son who raised the Kentish Rebellion in 1554, the first year of Mary's reign, and thereby lost his life and estates. The present building must, however, have been built before the Wyatts came in, judging by such detail as is left, which is not much. The general plan can be deciphered, but the particular uses to which the ruined chambers were applied is a matter of conjecture for archæologists rather than for architectural students.

The entrance gateway still retains its doors and the groove for the portcullis. Over it was a large room and adjoining on the ground floor was the guard-room; but the walls which once resounded with the clash of arms and the heavy tread of the mailed warrior, now only echo the quackings of ducks and the loud peans of exultant hens. Here may be seen the opening of a fireplace, there a ragged aperture indicating the existence of a window, from which all wrought stonework has long disappeared. The two main courts into which the castle was divided are plainly distinguishable, and in the first or more northerly still remains the porch leading to the great hall. The site of the buttery and servants' offices is now occupied by a house formed partly with the old walls and partly built with the old materials, making a picturesque group of gables and red roofs. At the north-east end of the hall are pits and shafts, which are probably remains of the latrines. The whole place has the provoking air of being on the point of revealing its mysteries, and then baffling the inquirer when he prosecutes his searches. The only detail of note left is in the porch of the hall, and some corbels of a fireplace in the remains of the tower at the south-west corner of the southern courtyard. A pleasant hour or two might be spent in puzzling out the plan and wandering in the gardens that surround the ivy-covered walls, but the interest would be distinctly archæological.

There is even less of Leybourne Castle remaining. Here, too, the gateway is left with the doors and the groove for the portcullis; fireplaces may be distinguished and a few plain windows, and here, too, at opposite angles of the structure are remnants of the latrines, but beyond this there is nothing but ruined walls of varying height. Some century or so ago the place seems to have been habitable, judging from an old print in Harris's "History of Kent," but it was in the same fashion in whcih Allington is now habitable; that is to say, there was a dwelling-house constructed partly on the old walls and partly out of the old materials, but bearing no true relation to the original structure. Leybourne was the home of a family of the same name from very early times till the reign of Edward III., when the race was represented by an heiress called the "Infanta of Kent," from her vast possessions. She piously gave Leybourne to the king "for the endowment of religious houses," and the king gave it to the Abbey of St. Mary Graces in London, from whom it passed at the dissolution to various secular hands, and finally came to the Hawleys, of racing celebrity. The church is not more interesting than the other churches in that part of Kent, many of which are called "interesting" in the guide-books; but this term must be taken in a strictly comparative sense, the standard not being very high. It may be safely asserted that it is always better for an architect to go inside even the meanest-looking church than not. If he does so here, in addition to the actual structure, which consists of a nave, chancel, north aisle,—unusually narrow, and separately roofed, with a very narrow span,—and tower (recently rebuilt), he will find in the said north aisle a Decorated niche of unusual, and withal poor, design, in which some years ago a heart was

found, enclosed in a leaden box. For those to whom early work and other irreproachable architecture is a burden, there is a pleasing Jacobean pulpit.

At Birling, a little further on, there is a church with a wide chancel, which gives a pleasant spacious feeling to the interior, and the tower is one of the most picturesque objects which the programme afforded.

Maidstone can boast the possession of a fine group of buildings in the Church of All Saints, the old Hospital, and the Archbishop's Palace, standing, as they do, just above the river, and presenting a medley of gables and towers and windows and red roofs, set off with the green foliage of eight fine trees. A closer inspection is somewhat disappointing. The church has been very much restored, and the other buildings offer but little detail. Their charms can best be rendered in water-colour; pencil sketches do not do them justice. Nevertheless pencil can reproduce some of their essential qualities,—simplicity of design and breadth of treatment. The old parish church, according to Harris's history, was called St. Faith's, but in his day only the chancel remained, and that seems now to have disappeared. All Saints is now used as the parish church. The party saw Maidstone under the guidance of Mr. J. D. Sedding, from whose description of the buildings we extract the following:—

"Rising from a terrace some 30 ft. from the face of the stream is the church,—once Our Lady's, now All Saints',—with its sturdy breadth, lofty tower, and low-spreading gables, filled with Perpendicular windows. On the south, with its gardens stretching down to the river, is the College, or Hostel of All Saints, with its towers and gateway and long roofs and gables; and on the north, is the Archbishop's palace. Altogether this is a fine group, a composition ready made, where the sketcher has before him the pearliest of grey stone walls, the greenest of ivy, the most golden lichen stains upon purple and brown roofs, red weather-tiling, and a medley of towers, turrets, gables, chimneys, and roofs, the whole drawn together by the blue sky above, and the grey-green river below.

There was an old church upon the site, but all that remains of it is a patch of encaustic tiles of thirteenth-century date, now affixed to a board in the chancel. The present church is assigned to Archbishop Courtenay (1381–96), who obtained the king's licence to convert the parish church of St. Mary into a Collegiate Church, dedicated to All Saints. Perhaps the air of spaciousness one sees in the structure is due less to deliberate design than to the exigencies of the scheme of its ground plan. For, unlike ordinary Gothic buildings, this is set out in squares and definite proportions. Thus, the nave, including aisles, is a square of 92 ft., and the chancel, a square of 62 ft. The chancel has three bays, the nave six, so that the largeness of windows, the span and loftiness of arches, the thick walls and ponderous buttresses follow as a matter of course. The church is a bold structure, but there is no play of fancy anywhere to rave about. It is Transitional work, neither "Decorated" nor "Perpendicular," yet both; but we miss the delicate detail and refined finish of the Perpendicular, such as we have in the later examples.

The walls of the nave arcades are 3 ft. 6 in. thick. The arcades have a peculiar effect, as only the inner order of the arch is stopped by a capital; the rest of the mouldings run unbroken to the ground.

There is a clearstory window of two lights over each arch, and although there is a chancel arch the nave and chancel roofs are continuous. The parish is to be congratulated on having Mr. Pearson as the architect of the church; he has just re-roofed the building with magnificent oak roof, richly traceried, and this and other excellent works have been carried out at the cost of about 12,000*l*. The easternmost arch on the south of the sanctuary is filled with a stone structure, which combines four seats and credence towards the chancel and a tomb on the other side. Above these rise three tall open canopies, capped with spires. The tomb was erected by John Wootton (d. 1417) for himself. He was first Master of the College; the brass has been removed. Altogether, both as regards ornament and general form this work is Decorated rather than Perpendicular. The arms of the see, of Wootton, of Courtenay, and of Thomas Earl of Arundel, who succeeded him in the chair of Canterbury, appear on the tomb. The same arms occur on the choir stalls, which are twenty-eight in number, eight of them being return-stalls. The font is Jacobean, and interesting. The church is rich in fine monuments; the finest is the Astley monument, removed recently from the chancel and placed at the west end. The carved figures are good; the curious part of it is the triptych arrangement to the upper stage, the wings project 2 ft. 6 in., and the whole thing is probably a reminiscence of an old triptych. Note also the Caskare monument in the north chancel aisle, date 1639; the noble monument in the south chancel aisle (name obliterated), date 1651; also a beautiful monument to Humphrey Tufton (date 1641), on respond of chancel arch.

The College gateway is a bit of broad design such as only old-fashioned architects dared to do. It is an oblong edifice attached to other buildings, and is 55 feet long by 25 feet 6 inches outside measurements. There are two tiers of windows to the lower half, which is divided by a string-course from the upper half, where are long transomed windows. The whole is surmounted by deep battlements. A large and small archway are in the centre. This oblong box of a building, with a face as flat as a board, with no niches, no buttresses, and with no frippery of ornament, has much to teach, and much power of appeal. It is architecture not of the laboured sort, yet as full of "go" and as fine as need be. Not a little of its character is due to the casual array of windows and entrances; the windows to the upper room are not immediately above those in the lower stages, and there is a big cart door alongside of a smaller archway for foot passengers; there is some fine vaulting above the archway.

The Archbishop's Palace is of several dates; the alterations of various times which have obscured the original scheme of the building have added vastly to its picturesqueness, and no pleasanter subject for a colour sketch than this ramshackle old building could be found in all Maidstone.

The Barn, north-east of the church, is of fifteenth-century date, and is a fine building.

Of old houses in the town I will mention Chillington House, in St. Faith-street, now the Museum. Mr. Nicholson's printing-office, in Bank-street, should not be missed, for its fine treatment of carved plasterwork of Jacobean date. For a fair-sized brick house, date 1720, go to Knight Rider-street. Here and there, in by-streets, are pleasant relics of old days."

Aylesford, which lies on the Medway a few miles below Maidstone, retains its old fourteenth-century bridge, of which two of the arches have been thrown into one in the endeavour to meet the exigencies of modern traffic. There is something particularly fascinating about an old bridge. It speaks of so many generations who have come to the same place for the same purpose. Churches have changed with the changed ritual, or have been restored out of all knowledge; castles have crumbled down till, as at Allington and Leybourne, it is hard to realise their original purpose; houses have slowly altered to suit the advancing civilisation of each succeeding tenant; but an old bridge generally remains to-day as it was in the beginning, and is a witness to a long-established civilisation, and the community of human interests. The church at Aylesford by no means rouses the same train of thought as the bridge: it is a fine building, well kept and cared for, but restoration has effectually removed the old atmosphere. Not so with the other building of note in the place, the Friary. Here the interest has certainly changed with passing centuries, but it has not died out altogether.

The greater part of the buildings were originally erected for the Order of the Carmelites, but at the Dissolution they were granted to Sir Thomas Wyatt, of Allington, and were subsequently forfeited by his son on his attainder. Elizabeth granted them to Sir John Sedley, and by one of these owners they were transformed into a dwelling-house, the old cloisters and other parts being worked into the new scheme. Sir John Sedley has left his mark on one of the doors under the archway of the entrance lodge, where a shield occurs bearing the date 1590 and the initials I. S. Subsequent owners made many alterations, and the house seems to have been remodelled and ceiled and panelled throughout about the year 1700, at which time Sir John Banks was the owner. There are many picturesque corners about the place, but the same remark holds good here that may be applied to nearly all the views that Kent has to offer, that, to do the buildings real justice in a sketch, colour is essential.

## THE STONE AGE GRAVES AT FALKÖPING, SWEDEN.

Stockholm, bright, lively, and gay as Paris its splendid bridges crowded, its waters gleaming in the sunlight, bands playing, is an ancient city, founded in very remote times by Birger Jarl; the famous Riddarholm church was built by his son Magnus Ladulås, who, with his brother Valdemar, carried out their father's designs, and made Stockholm even then worthy of being placed among the cities of the kingdom. Upsala is still older; indeed, it is scarcely known when Gamla Upsala, Odin's pagan-seat, took its beginning, and besides Upsala there are "modern" towns in Sweden, Lund, Skara, Sköfde, Vodstena, Strengnäs, Vesterås, and others, of very great age, while Sigtuna is little more than a ruin, and Björkö is only known from the rich "finds" that have been made in this once flourishing city, from the last years of Paganism and the beginning of the Christian period. Wonderful indeed have been the finds at Björkö, consisting of about everything that can be found in the earth, proving that there was once a large and thriving community there. The upper part of the island is said to be completely covered with *ättehögar* (giant mounds), and other graves, triangular, square, and boat-formed stone settings. "The number of such graves, visible above ground, amounts to over 2,000, and still more have been found demonstrably." Nearly six pages of the voluminous catalogue of Swedish "finds" belonging to the National Museum are devoted to Björkö. During the systematic investigations that have gone on since 1871, more than 800 graves have been examined, but of all these archæological wonders one sees nothing from the deck of the steamer. Björkö shows nothing but gentle slopes of pine and granite, and the steamer does not slacken speed past this Northern Pompeii, literally a buried city.

Sweden has awakened in recent times to antiquarian research. It was during the regency of Carl XI., in the year 1666, that the *Antiquitets Collegium* was founded, which was commissioned "to establish a place of preservation for the treasures of antiquity that might be found in the earth," and soon began to collect relics and mementos; some of the things that are now preserved in the State Historical Museum (the National Museum) in about 1670 formed the basis of this collection, of which we may give some more specia' account on another occasion.

Together with the old cities there are a great number of old churches in Sweden, many of them dating from the eleventh and twelfth centuries, the Skara, Olnseby, and Lund cathedrals, Vämbs church, Vreta cloister, and Varnhem cloister churches, Riddarholm, Visingsö, &c. The latter contains so many art-objects that it can "rather be called a museum than a temple in the usual sense." But these words apply almost equally well to the Skara or Upsala cathedrals, or those at Vesterås or Lund. Sweden excels in collections. As for castles and ancient domains their name is legion. To mention Gripsholm, Skoploster, Vadstena, Upsala, Kalmar, Leckö, Beckaskog, Vik, is scarcely an indication of the wealth of repositories, in the shape of royal or noble domains, for the vast wealth either collected in a martial way during Sweden's period of greatness, produced through the art industry of the people or exhumed from the soil, as illustrations of the Stone, Bronze, and Iron Ages. To be methodical, one can best study the Stone Age in Skåne, Vermland, Öster and Vestergötland, Småland, and Bolmslän, but "of all Sweden's provinces," affirms Dr. Oscar Montelius, "Skåne, and especially the low lands along the coast, was most thickly peopled during the Stone Age. Out of about 50,000 relics of stone, which one now knows to have been found in Sweden, more than 36,000 are from Skåne. Only about 3,000 are known from the whole of Svealand and Norrland."

The finds from the older Bronze Age are limited to about the same localities, but from the younger Iron Age, the Viking period, has been found a mass of treasures, many of them ornaments and jewellery of silver and gold, not to speak of quantities of coin, from every province in Sweden up to Dalecarlia and Norrland, giving evidence of extremely luxurious habits of

life, an extensive commerce, and a high degree of civilisation.

Falköping, or Rantan, as the little station is called, lies on the main route between Stockholm and Gottenburg; Gamla Falköping, an antiquated dead town, is a few miles back. An hour or two by rail to the north-east is Sköfde, once a famous place of pilgrimage, and with a patron saint, St. Helena, and to the north-west Skara, which, in pagan times enjoyed as great repute among the inhabitants of Göteland as Upsala among the Svear in middle Sweden. Between these two towns lies the famous Varnhem's cloister church, a memento of the Cistercian order. The next large town by rail, northward from Skara, is Lidköping; and from the lake, the great Lake Wener, rises Seckö Castle, on its granite island, a noble relic from Sweden's brilliant period. The scenery around Sköfde and Skara is very fine, the two mountains, Billingen and Kinnekulle, being celebrated for their luxuriant vegetation and splendid forests. Nature there gives no hint of the consummate ugliness she attains in the region around Falköping and on the great plain, broken only by gaunt, low ridges, dignified by the name of Alleberg and Mösseberg, which is a veritable city of the dead, such a necropolis as is seldom seen.

It is more than probable that I should never have known of the existence of these wonderful graves but for a casual remark of Dr. Montelius one day, when he was showing me some Stone Age antiquities in the National Museum. "If, in your travels, you are ever near Falköping, you must be sure to go there and see the graves, *gånggrifter* and *hällkistor*, of the Stone Age people." Those whom I asked near the spot had heard that there were such graves somewhere in the neighbourhood, but they could give me no idea of the locality. No one that I spoke to had ever seen them or had the slightest desire to. Starting on my hunt early in the morning, it was four o'clock in the afternoon before I reached the first grave, fortune having blessed me with an intelligent young man for a driver (he drove a private conveyance), and an antiquarian enthusiast for a guide, in the person of the son of the schoolmaster of the district, who happened to have been with the party who opened the graves, officially, vested with the august authority of the State Historical Museum, in 1872,—Drs. Montelius, Hildebrand, and the rest. He told me how they went to work and what they found in the graves. The articles from the first one we entered, the famous large passage-grave (*gånggrift*) near Karleby Church, are contained in drawer 80, in the State's Historical Collection, National Museum, and are specified thus in the Swedish catalogue,—"Amber beads, bone implements, flint splinters, &c." Another "find" described in the catalogue was in a *gånggrift* at Rantan railway station, examined in 1868, and consisted of "Eleven daggers and spear-heads, four arrow-heads, a little chisel, and a number of splinters of flint, a stone axe with a handle-hole, two slate whetstones, an amber bead, three bone needles, and three clay vessels. One of the bone needles is bent at the point, and has a large, round flat-head, which is perforated in the middle. Besides, were found here,—as in other Vestgöta graves from the Stone Age,—a quantity of unburned human bones."

We went into a *stendös* next, which is thus technically and officially described:—"A *stendös* is a sepulchre whose walls are formed by large, thick stones raised on end, which reach from floor to roof, and which on the inside are smooth, but on the outside usually uneven. The floor consists of sand, pebbles, and the like. The roof is usually formed by one or several very large stone blocks, which are also smooth on the side turned inward toward the room, but for the rest irregular. The form of the room is square, five-cornered, oval, or almost round." *Gånggrifterna*, the more spacious and aristocratic post-mortem residences, sometimes called *jättestuporna* (giants stugor), "are built in the same way as *stendösarna*, but they are larger and are distinguished by a covered passage, often very long, leading towards the east or south. There are several intermediate forms between *gånggrifterna* and *stendösarna*. The chamber in a gånggrift is not infrequently 20 ft. (Swedish) long, or over, 9 ft. broad, and nearly 6 ft. high. The passage is narrower and lower, but sometimes equally as long as the chamber. These graves are either concealed in a mound, which then resembles an ordinary barrow, from the late pagan period, or standing free in a greater or less degree, generally on an elevation surrounded with stones."

Those I explored were half hidden in a mound, otherwise agreeing completely with this description.

These two kinds of graves are said to appear in Sweden only, in Skåne, Hallond, Bolmsläu, Vestergötland, and at Öland. Besides, in Sweden they are found in great numbers in most of the coast lands of Europe and Northern Africa, as well as in South-western Asia and India.

My guide then said he would show me a particularly fine *hällkistor*, though this was some distance off, and hard to get to. We left the main road, struck a side one, and left that; struck a cow-path, and left that; then meandered along a side hill, with two wheels considerably higher in the air than the other two, and then got out and walked the remainder of the distance.

"*Hällkistorna*, sometimes more than 30 ft. long, are formed of flat stone slabs, and are besides surrounded with a low bed of earth or stone. They appear especially in Vestergötland, Bolmsläu, Dal, and the south-western part of Vermland." The one we went in search of was one of the best in the whole country. In it had been found,—"Thirteen daggers, of which one in particular is unusually beautiful and well-wrought, six spear-heads, four arrow-heads, a little chisel, a saw, six scrapers, and ten splinters, all of flint; five slate whetstones, two needles and four punchers, of bone; two amber beads; two small beads, of bronze; and the broken-off point of a spear-head, of bronze; besides these were five clay vessels, and more than sixty skeletons in the grave. The *hällkistor* is 15 ft. long and 7 ft. wide. The south gable-stone lies underneath a half-circular opening; outside of it is a little 'entry,' and outside of this a broad, short passage."

I had now been well over the tract that is pronounced, and with good reason, "one of the most remarkable regions in Sweden, in an archæological respect." The whole broad plain is covered with these graves, of the different varieties, few of which, however, have been opened, and every strange protuberance on the otherwise flat surface of the ground sets the imagination at work. One could scarcely see a tract that bore so distinctively the stamp of the remote past, a past that really has no record. B.

## SANITARY STATISTICS OF GLASGOW.

The second part of the "Vital Statistics of Glasgow," by Dr. James B. Russell, Medical Officer of Health, contains a mass of interesting information with regard to the various districts of that city tabulated in such a manner as to be readily understood.

It seems that the defects of what are called model dwellings are beginning to make themselves felt in Glasgow as they are in London and elsewhere. In the Woodside district is Roslin-place, a *cul de sac* closed by the Lumsden Model Buildings, a four-storied tenement of one-apartment houses (or, as we in England would call them, of single rooms), inside each of which was originally a water-closet. These have been abolished, but the building remains as a good illustration of what model buildings become when held by ordinary landlords, let without selection, and left without special supervision. In the Kingston District to the south of the Clyde the report observes there are isolated sanitary plague spots of little importance in proportion to the preponderating mass of houses of good character, but still exhibiting the same features of back lanes, narrow lanes, and want of free aëration, which, when prevalent over a large area, are associated with high death-rates.

Gallowgate, Foundry Open, the two Dove hills, and the Old Saracen Hotel, in which Dr. Johnson put up, every bedroom in which is now a "house," are also described as bad spots. Cowcuddens is described as dense blocks of buildings packed with back tenements and intersected by narrow lanes. Lying as this district does in a hollow sloping down to the canal and smothered in smoke and obnoxious exhalations from high ground on all sides, it is much in need of reconstruction and amelioration in the physical conditions of health.

Bridgegate and the Wynds is another bad district. It lies between Stockwell-street and Saltmarket on the west and east, and Trongate and the Clyde on the north and south. The Union Railway Station occupies the centre of the district. Considerable improvements have been made of late by the action of the railway company and of the Improvement Trust. Still, the Report continues, in those portions which remain we find a population the like of which for social and moral degradation is not to be found in the city. The houses, although much has been done for them, are radically bad, and total demolition and reconstruction is the only remedy. To enumerate these plague-spots would be only to catalogue all the wynds, narrow noisome streets and closes of this unhappy area, and to bring once more into public notice names which have been the heartbreak of successive generations of Glasgow philanthropists.

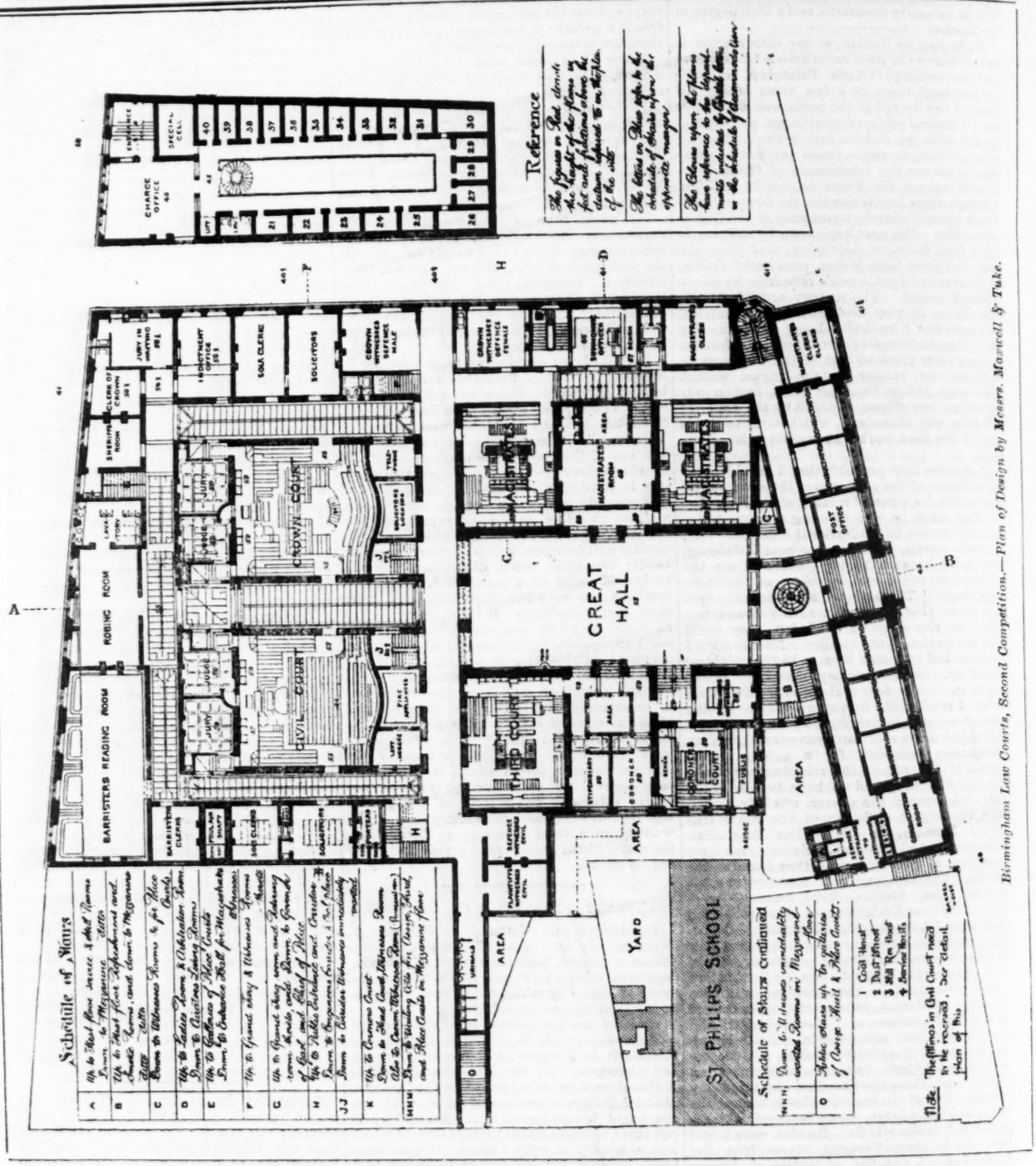
The Report concludes:—"We began this survey of the Districts of Glasgow with Blythswood, which embraces George-square and its vicinity and the North British and Caledonian Railway Stations, and is remarkable as having the lowest proportion of inmates per inhabited room, the largest proportion of large-size houses, the lowest death-rate, the lowest birth-rate, the lowest mortality under five years of age, the lowest proportion of deaths under one year per 1,000 born, and the lowest proportion of Irish-born; we end it with Bridgegate and Wynds, which has the largest proportion of inmates per inhabited room, the largest proportion, save one, of one-apartment houses, the highest death-rate over all, the highest death-rate under five years, the largest proportion of deaths under one year per every 1,000 born, and the highest percentage of Irish-born inhabitants."

We commend the following, from page 73 of the Report, to those who are interested in the construction of model dwellings, as embodying a truth we have often endeavoured to enforce in these pages:—"We shall be able amply to illustrate the law that the comparative healthiness of sections of population, whether they be territorially separated and known by name as distinct communities, or are merely artificial divisions of the same community, is determined by the air-space within and without their dwellings. We can classify the inhabitants of one city so as to produce four cities, which, though standing upon the same soil and exposed to the same sun and air, and general influences of nature, present contrasts in general mortality, liability to certain diseases, and other social and moral particulars capable of statistical expression, which are related to physical differences, especially as to air-space, which seem to be as effective for good and evil as separation by many degrees of latitude and longitude."

A striking illustration of the accuracy of this definition is to be found in the fact that the two districts of Blythwood and Bridgegate and the Wynds which have been alluded to as being at the two opposite ends of the scale as regards death-rate, and all other sanitary indices, are in the heart of the city, and are only separated from each other by a street,—Trongate.

**Society of Engineers.**—On Tuesday, the second vacation visit of the Society of Engineers for this summer was made to the Southwark and Vauxhall and the Grand Junction Waterworks, at Hampton. At the first-mentioned works the chief point of interest was the new engines, now nearly completed, constructed by Messrs. Moreland & Son, of London, to the design of the company's engineer. The party was received by Mr. J. W. Restler, engineer of the Southwark and Vauxhall, and Mr. A. Fraser, engineer of the Grand Junction Waterworks. A dinner was afterwards held at the Mitre Hotel, Hampton Court, Professor H. Robinson presiding, in the absence of the President, Mr. B. F. Nursey. "Success to the Society," and various complimentary toasts were proposed, Mr. A. T. Walmisley and the Chairman being especially thanked for their efforts in promoting the success of the excursion.

**Edinburgh Castle.**—It appears that "restorations," more or less, are to be carried out at Edinburgh Castle, in St. Margaret's Chapel, the Argyll Tower, and the Parliament House. From a description of what is intended, which has been communicated to the *Times*, it seems that a good part of the contemplated work is really making over again what has disappeared, and for which there is only documentary evidence: an unsatisfactory and doubtful proceeding. Mr. Hippolyte Blanc is the architect in charge of the work.



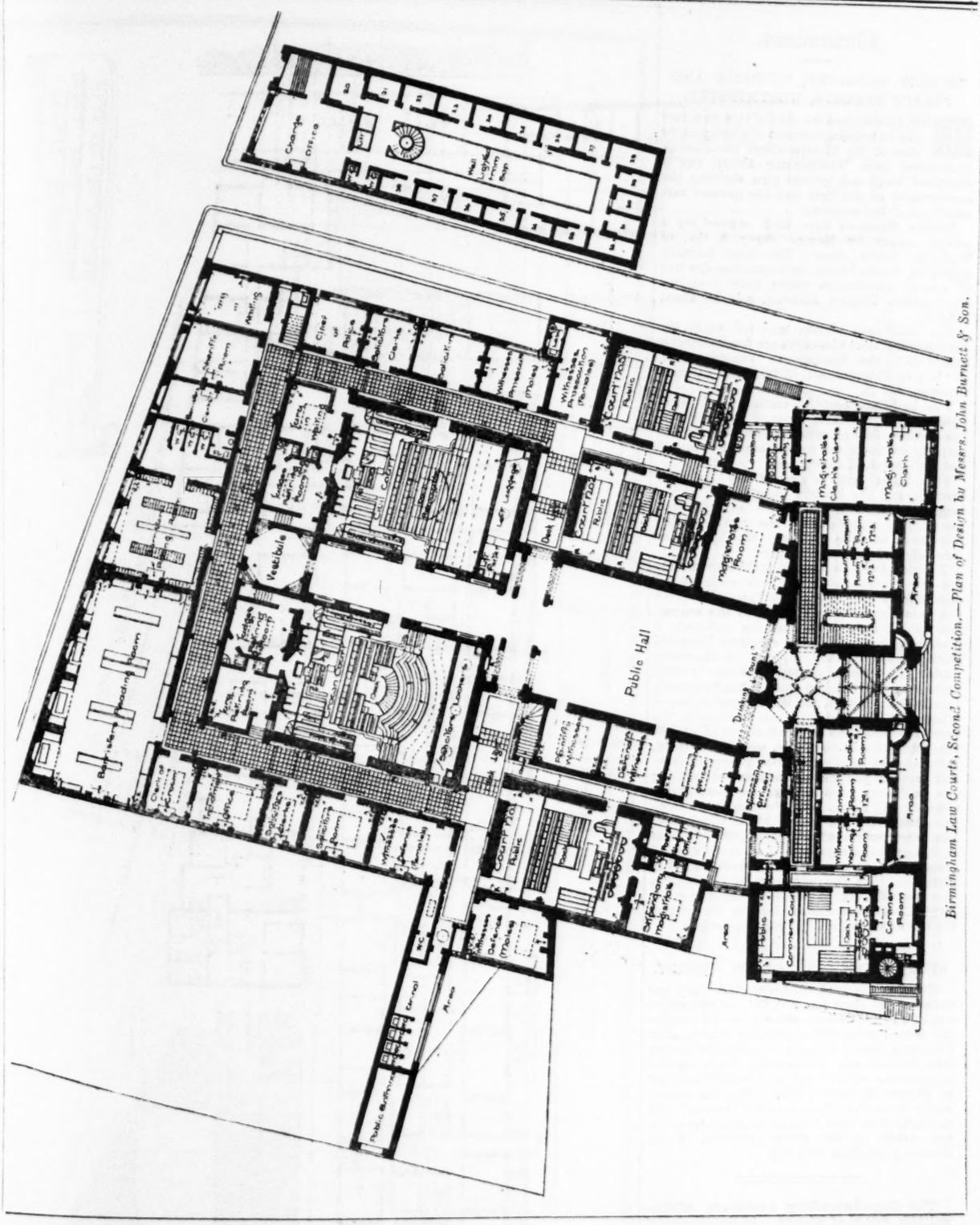

*Birmingham Law Courts, Second Competition.—Plan of Design by Messrs. Maxwell & Tuke.*

## PUBLIC BATHS AT POPLAR.

THE works at the Poplar Baths, which will involve an outlay of about 7,000*l.*, have been completed, and the buildings, inclusive of the laundry, are once again in use.

The Commissioners, in a report laid before the Vestry in February last, stated that they wished to have authority to carry out (1) adaptations of the buildings erected in the year 1851 (from the designs of Mr. Baly) to the requirements of the time and neighbourhood,—that is, improvements and alterations of somewhat radical character; (2) modifications and improvements in those portions of the buildings which were to be kept, generally speaking, as originally built; (3) general repairs; (4) new boilers, &c. The Vestry approved the proposals, and the required sanction of the Local Government Board was obtained. The tender of Mr. John Walker, Crown Works, Stainsby-road, was accepted for the building work; and that of Messrs. S. Hodge & Sons, of Millwall, for the new boilers and works in connexion with them.

The new first-class plunge-bath has a water area of 75 ft. by 26 ft., or nearly double the size of the old bath. The depth of water at the south end is 3 ft. 6 in., and at the north end 6 ft. 9 in. The sloped floor is of glazed bricks, with blue Staffordshire bricks at intervals. The walls of the bath are lined with white glazed tiles, with a pattern border under the slate curb. A continuous safety-rail is placed round the bath just above the water-level, which is 1 ft. below the passage-way. There are passage-ways all round the water of the bath; that at the north end, where the diving-board is placed, being about 9 ft. wide, and the others narrower. In a gallery, at the height of about 10 ft. above the water-level, the passage-ways are repeated: this gallery is reached by two stone staircases. There are dressing-boxes in the gallery as well as below, making up fifty-four in all; also the necessary latrine arrangements. This arrangement was resorted to in order to avoid the necessity of purchasing land for an extension of the site. The gallery floors and the floors of the dressing-boxes are of granolithic paving, by Messrs. Dennett & Ingle. The lighting is by a lantern and roof-lights of considerable size; the whole of the side lights are hung to open, and are controlled from the gallery level. The gas-lighting is by star pendants. The height from the water level to the ridge of the lantern is 34 ft. This ridge is also a ventilator. It is a copper trough turned bottom upwards, and heated air thus collects at the highest point inside the building, and finds its way out through louvred ventilators. A large amount of iron-work has been used; the cast-iron stancheons, &c., were supplied by Messrs. Young, Dowson, & Co., and the wrought-iron work by Messrs. Evans, Young, & Co., all being from the special details of the architects. A subway runs outside the walls of the bath, and in this subway are drains, water-pipes, &c. For supplying the bath all the water is passed into the bath, and then heated as follows:—A circulation of the water is established by bringing the water from the further end of the bath into the tank or heater at the bottom, and warming it by contact with copper pipes filled with steam. The top of the heater is placed at the level of the bottom of the bath, so that the warmest water strikes upwards through the mass of water in the bath, and a high even temperature is




*Birmingham Law Courts, Second Competition.—Plan of Design by Messrs. John Burnett & Son.*

thus obtained. Channels are placed adjoining the dressing-boxes, so that the water used in cleansing the floors may not find its way into the bath. A room for use by swimming clubs has been provided adjoining the waiting-room, and in this is a private bath, fully supplied, for use in case of accident.

The boilers were ineffective, and so two new Cornish boilers have been put in their places. Each boiler is 5 ft. 6 in. in diameter, and 24 ft. long, and set with a wheel draught. The old boilers have been put upon iron girders above the new boilers, so as to serve as heaters for a large quantity of warm water.

The private baths have been re-modelled, Rufford's Porcelain Baths having been used for the first class, and Stevens Bros.' enamelled iron baths and others for the second class. New fittings and water supplies have been supplied by Mr. Busby. The drainage of the whole of the buildings has been overhauled, ventilating man-holes put, and all the best modern requirements.

Mr. Buck has been the clerk of the works. Messrs. Clarkson have been the architects employed for the design and superintendence of the whole of the building and engineering works.

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**Crystal Palace School of Practical Engineering.**—The closing meeting of the summer term was held on Saturday last, when Sir Graham Berry, K.C.M.S., Agent-General for Victoria, presided, and presented the certificates awarded by the Examiners. The Examiners for the term were Messrs. Wm. Maylor, C.E., M.E., for the Mechanical Engineering and Colonial Sections; and A. T. Walmisley, C.E., F.S.I., &c., for the Civil Engineering Section. Both of the Examiners reported most favourably on the work of the students generally, and on the system pursued with so much success by Mr. J. W. Wilson, the Principal, and his son and staff, in the theoretical and practical instruction and training of the students. Sir Graham Berry, in addressing the students, expressed his high appreciation of the value of the work carried on in the school. The course of instruction placed the students who passed through it within measurable distance of ability to superintend the execution of important engineering and other works. His thirty-five years' experience of Colonial life enabled him to speak in the strongest possible terms of the value of the instruction given in the Colonial Section.

## Illustrations.

### PRINCES MANSIONS, VICTORIA AND PALACE STREETS, WESTMINSTER.

THE illustrations we give of this immense pile of buildings consist of a perspective view of the Victoria-street elevation as approached from Westminster Abbey, and a combined block and ground plan showing the arrangement of the flats and the general surroundings of the property.

Princes Mansions have been erected for a private owner by Messrs. Perry & Co., of Tredegar Works, Bow. The total building outlay for the six blocks, and including the cost of special foundations where built over the Metropolitan District Railway, will be about 168,500*l*.

The total area of the land (of which the Ecclesiastical Commissioners are freeholders) is 51,580 ft.; the frontage to Victoria-street, 350 ft.; to Palace-street, 43 ft.; total external frontage, 393 ft.

The buildings contain, exclusive of bath-rooms, &c., 712 rooms, grouped into seventy-five separate flats of various capacities, but the majority consist of ten rooms, forming complete and self-contained residences.

The floors and staircases are fire-proof throughout; the kitchen ranges, &c., and a large proportion of the stoves and chimney-pieces are supplied by the Coalbrookdale Company; and the hydraulic lifts by two or three of the best-known makers.

The elevations in Victoria and Palace streets are faced with red brick, with architectural enrichments of "Lascelles's Patent Fireproof Concrete Material," and which, at the suggestion of Mr. Bassett Keeling, the architect, is made to resemble in colour seasoned Mansfield stone, for which many inquiries on the works during the progress of the buildings by both architects and builders show it has frequently been taken. In this, the largest application of "Lascelles Material" in the metropolis, the great advantage has been felt of one of its best characteristics as compared with terra-cotta, especially for large works, viz., prompt delivery and accurate jointing, as, not being burned, but run cold into moulds, there are none of the risks of bad firing. As a consequence there have been very few if any blocks which have had to be condemned or replaced, and where, as in this case, the repetition of all mouldings and members is very large, the amount of detail is little more than the extra cost of the moulds. The ground floor of the block adjoining the London and Westminster Bank is occupied as the head-quarters of the Primrose League.

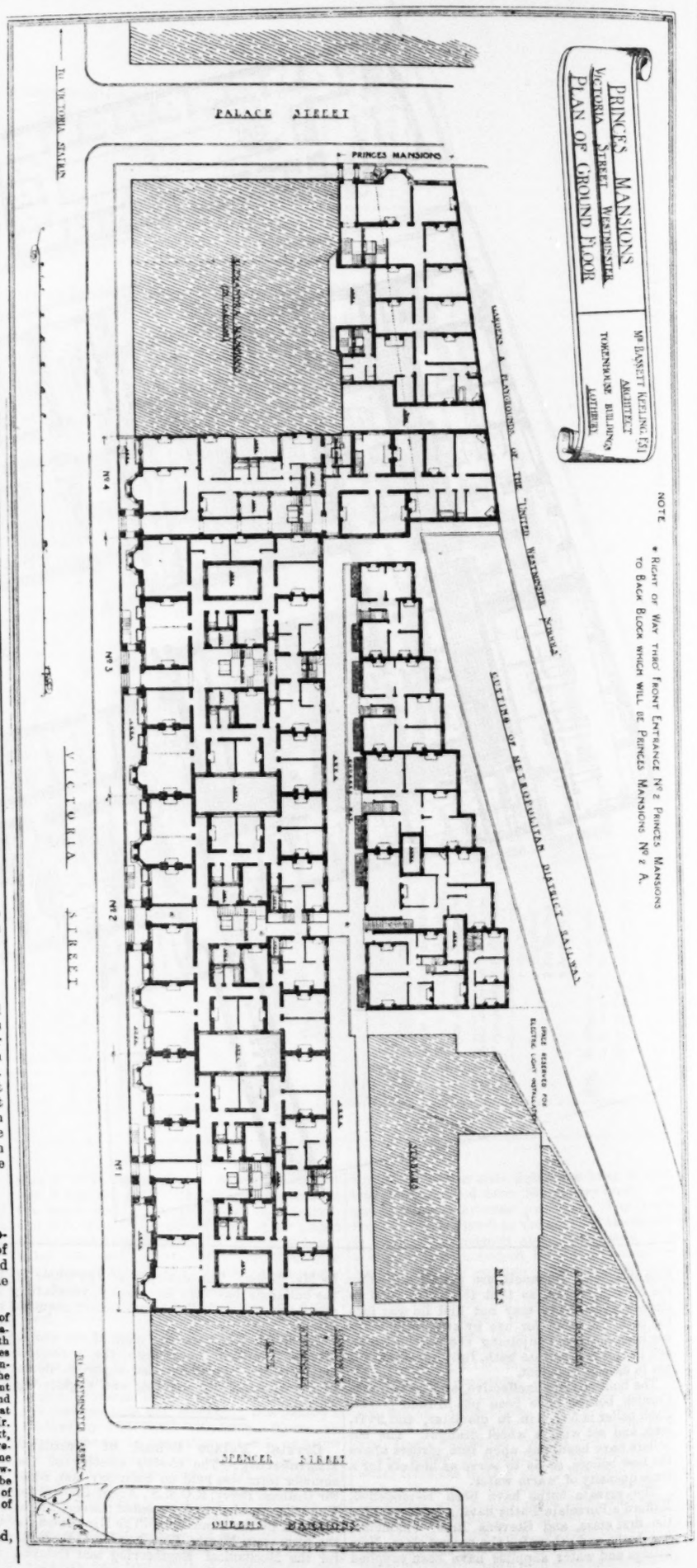
### BIRMINGHAM LAW COURTS DESIGNS.

We give this week the perspective views and the principal plans (pp. 230, 231) of two others out of the five designs which were selected for the second competition, that by Messrs. John Burnett & Son, of Glasgow (who are now Messrs. John Burnett, Son, & Campbell), which was sent in under the motto "Law and Order," and that by Messrs. Maxwell & Tuke, which was sent in under the motto "Two Judges of Assize." We commented on both designs at some length in our article on the whole exhibition of the drawings (*Builder*, July 31).

**The Superintending Architect, Metropolitan Board of Works.**—At the meeting of the Board on the 6th inst., the Works and General Purposes Committee presented the following report:—

"Your Committee are proceeding on the resolution of the Board of the 2nd ult., referring to them the applications for the office of Superintending Architect, with instructions to select and submit to the Board the names of six of the candidates whom your Committee may consider most suitable, with a view to the Board making the ultimate selection. Your Committee are not at present prepared to submit their report upon this reference, and as they will not be in a position to do so before the date at which, as at present ordered, the resignation of Mr. Vulliamy would take effect, namely, September 29th next, they think it desirable that Mr. Vulliamy should be requested to continue to hold the office for some little time longer, and with this view they beg to submit the following recommendation,—'That Mr. George Vulliamy be appointed Superintending Architect for a further period of three months, from the 29th of September until the 25th of December next.'"

The recommendation was unanimously adopted, without discussion.


PRINCES MANSIONS
VICTORIA STREET WESTMINSTER
PLAN OF GROUND FLOOR
Mr BASSETT KEELING F.S.I. ARCHITECT
PALACE STREET
PRINCES MANSIONS
VICTORIA STREET
SPENCER STREET
QUEENS MANSIONS
NOTE
* RIGHT OF WAY THRO' FRONT ENTRANCE No 2 PRINCES MANSIONS TO BACK BLOCK WHICH WILL BE PRINCES MANSIONS No 2 A.

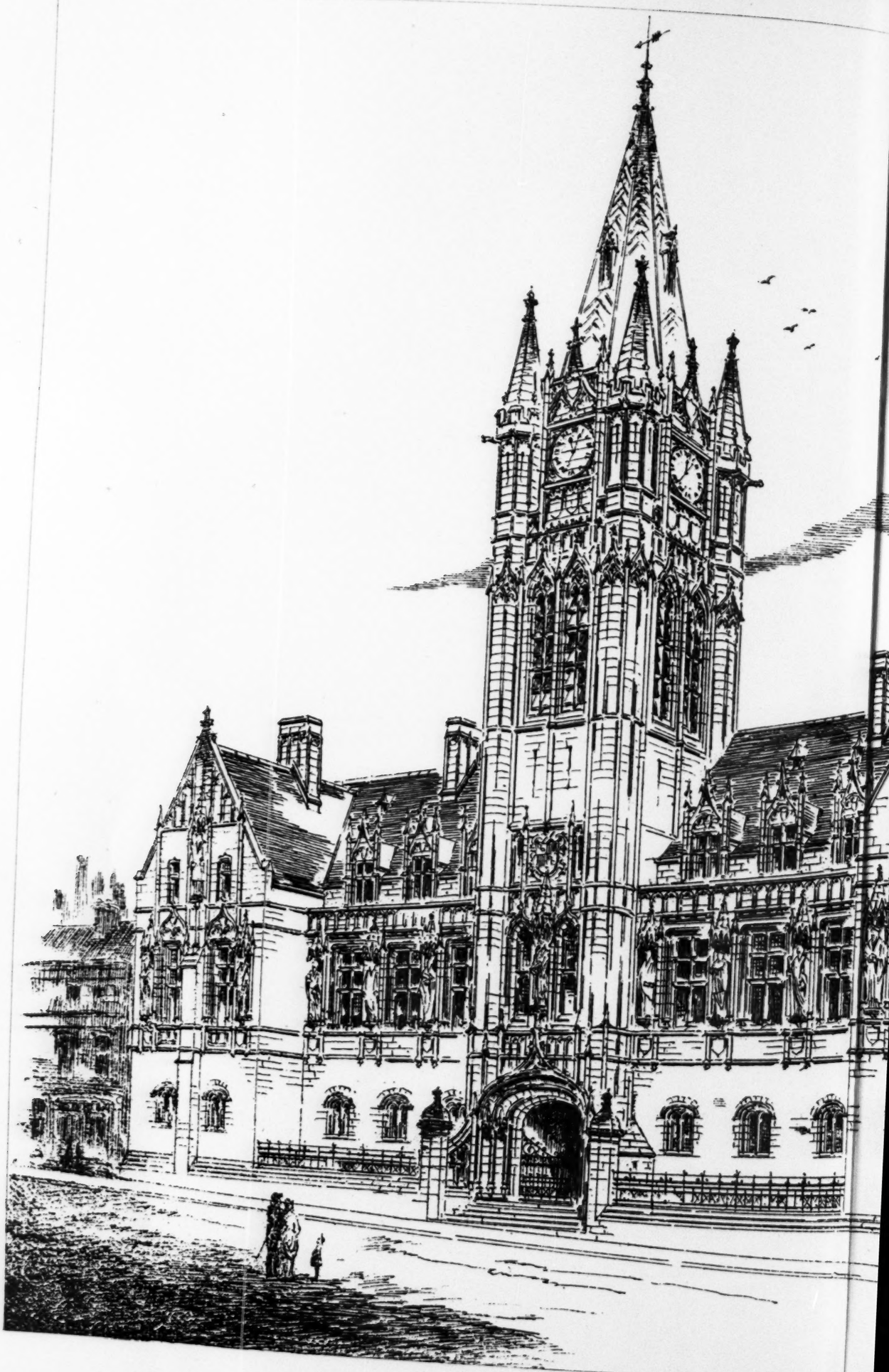
BIRMINGHAM LAW [C]OURTS

DESIGN SIGNED "TWO JUDGES OF [PRI]ZE" BY

"PHOTO-LITHO" SPRAGUE & Co., 82, MARTINS LANE, CANNON ST. LONDON, E.

OURTS COMPETITION.

IZE" BY MESSRS. MAXWELL & TUKE.



BIRMINGHAM LAW COURT

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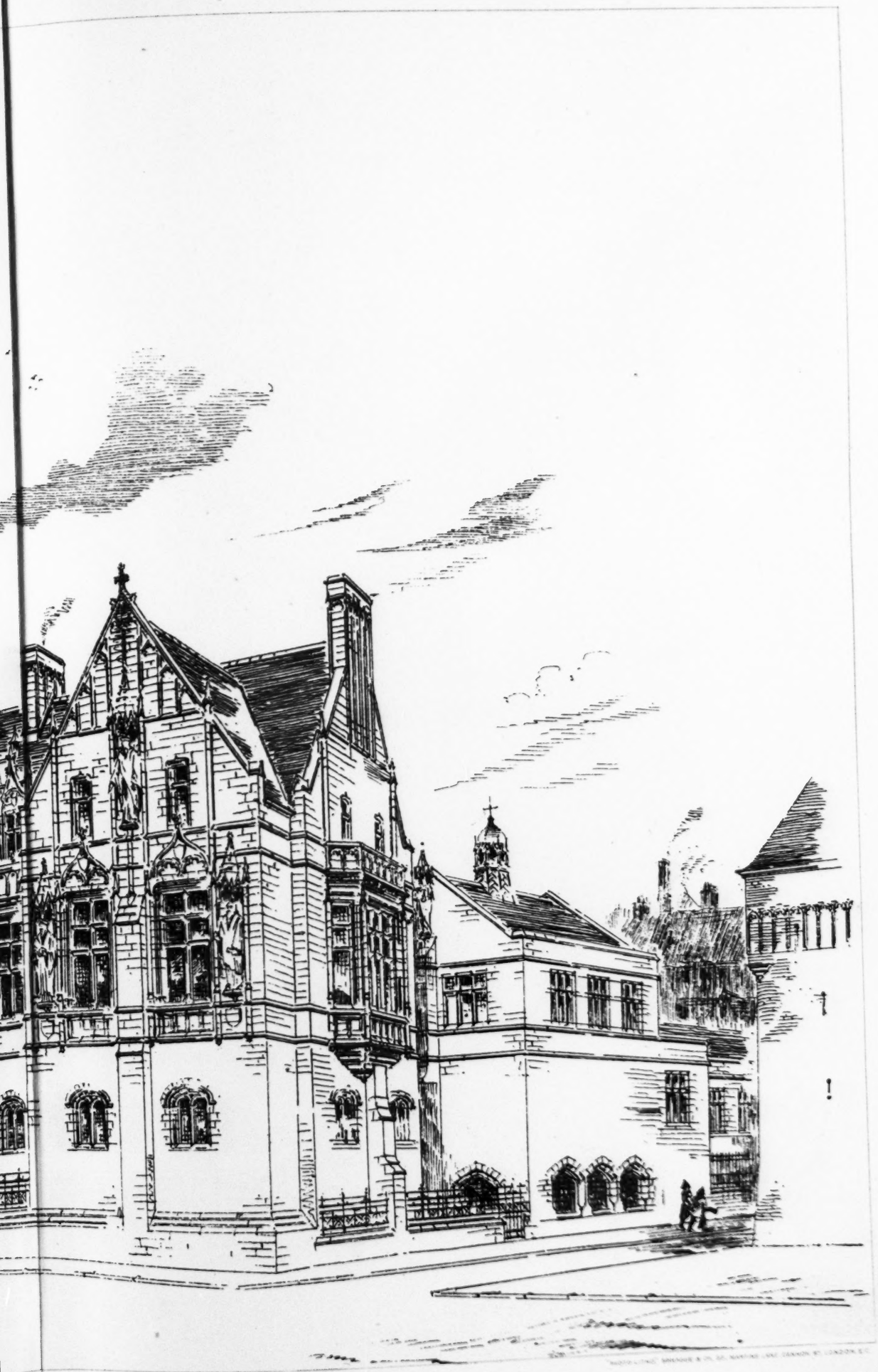
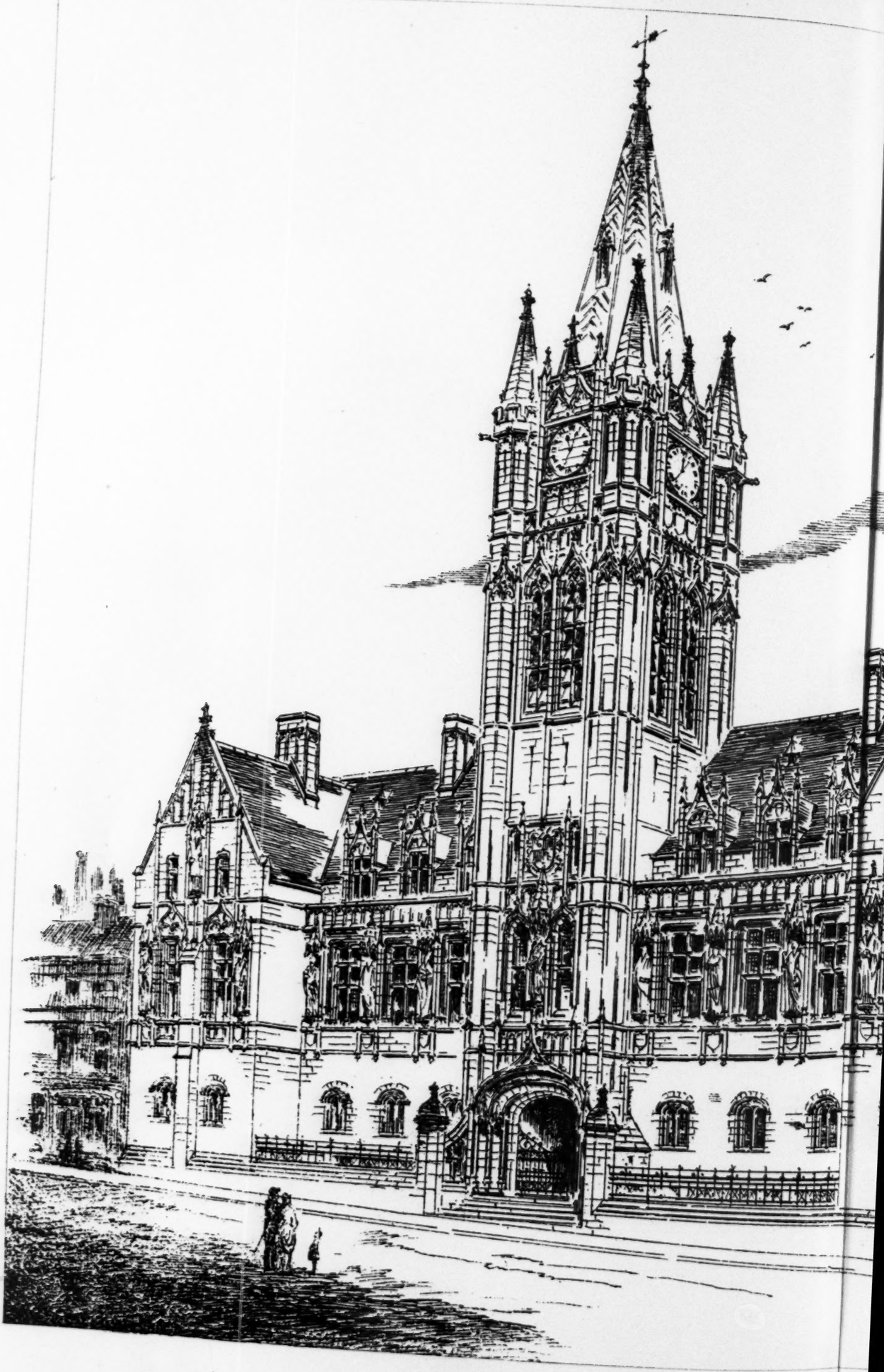


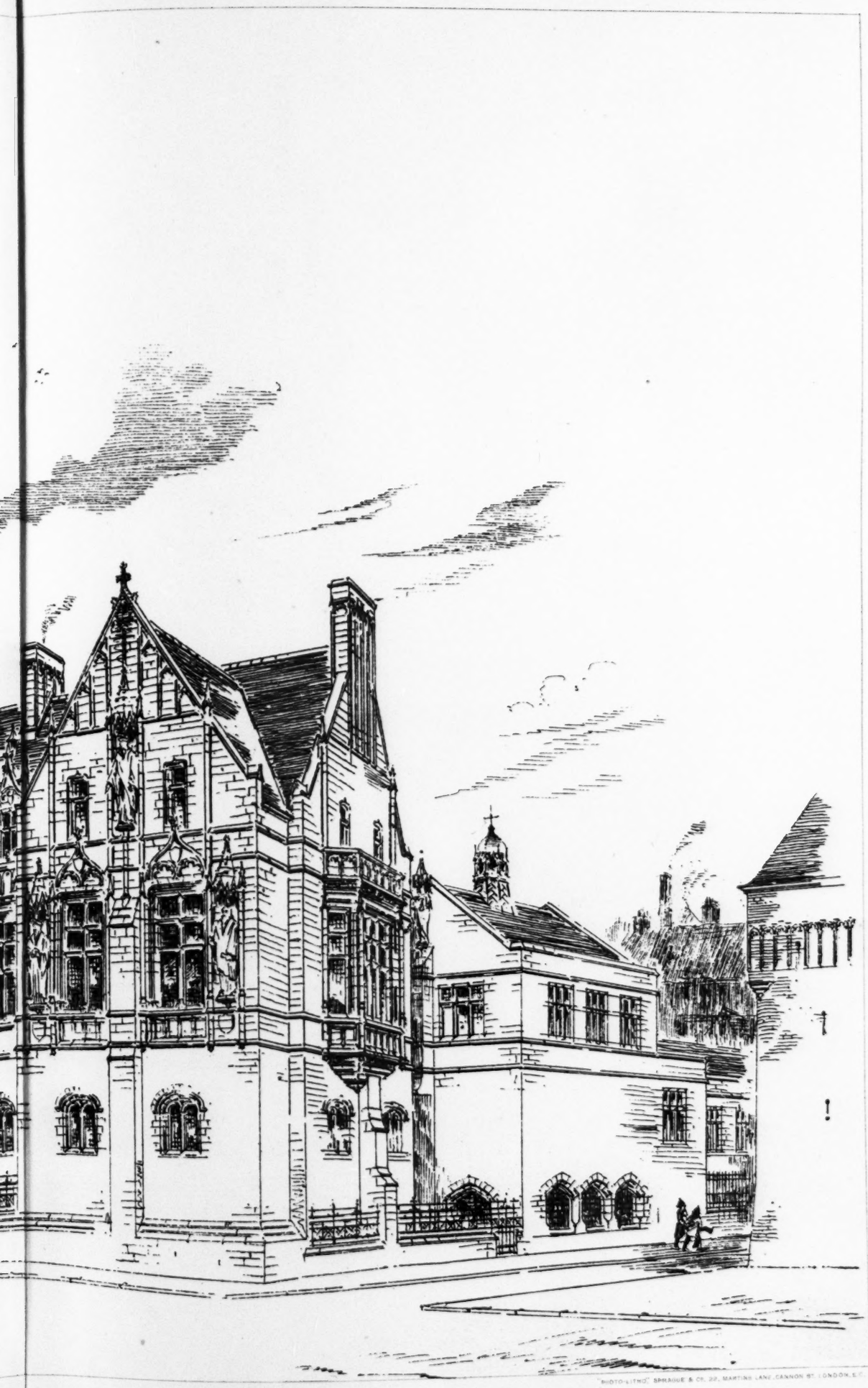
AW COURTS COMPETITION.

ORDER" BY MESSRS. JOHN BURNETT & SON.



BIRMINGHAM LAW COUR

DESIGN SIGNED "LAW AND ORDER" BY M

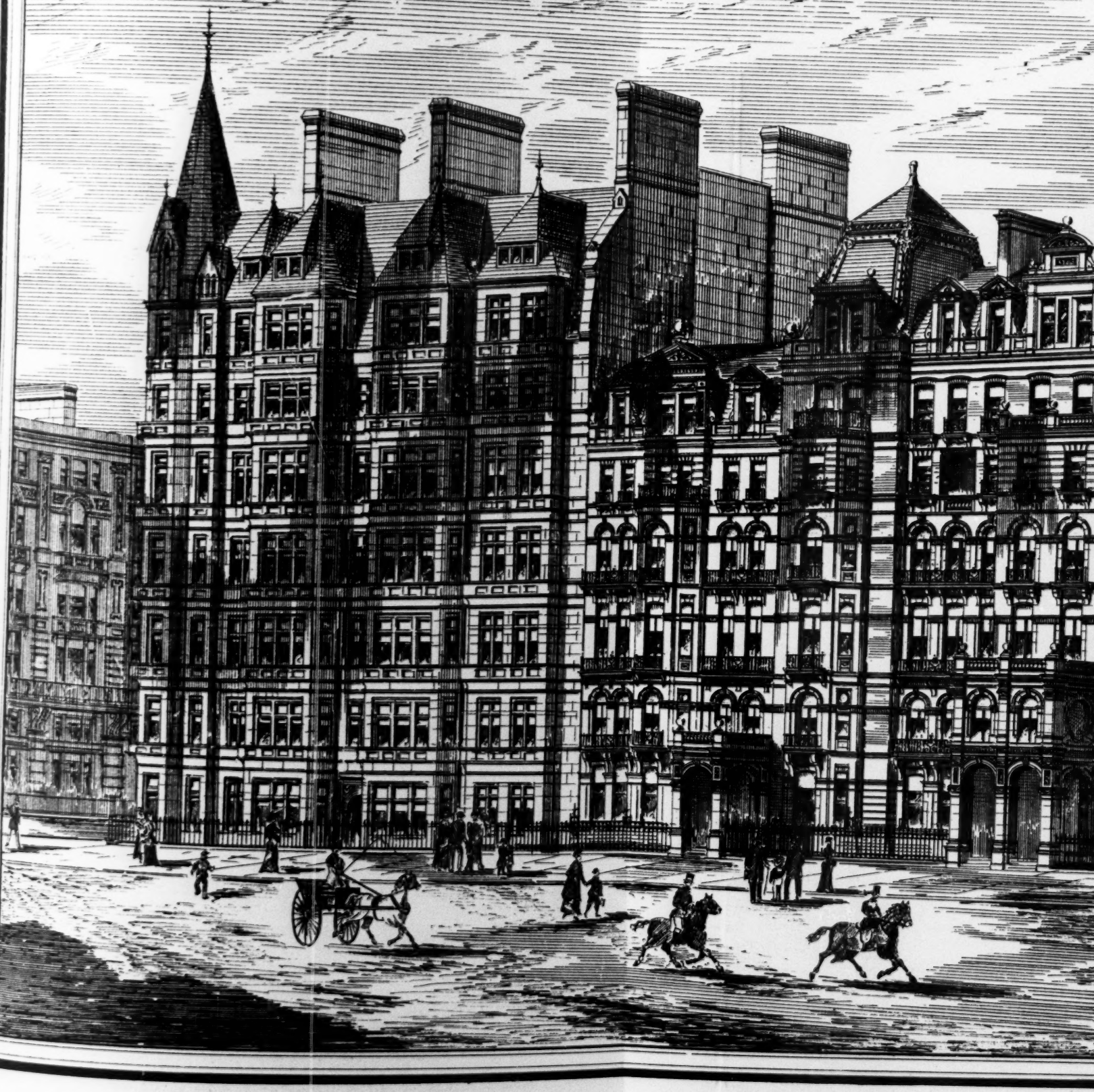


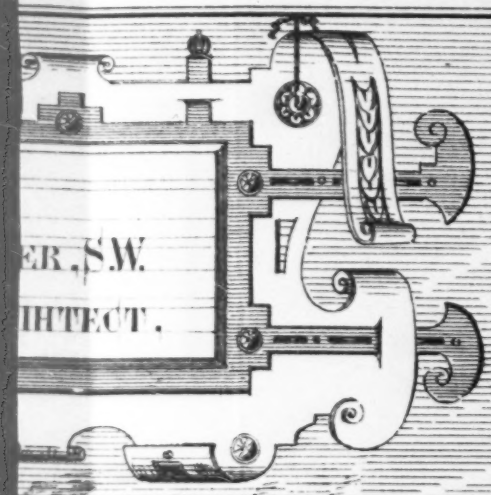
"PHOTO-LITHO" SPRAGUE & CO. 22, MARTINS LANE, CANNON ST. LONDON, E.C.

W COURTS COMPETITION.

DER" BY MESSRS. JOHN BURNETT & SON.

PRINCES MANSIONS,
VICTORIA STREET WESTMINSTER, S.W.
MR BASSETT KEELING, F.S.I. ARCHITECT.

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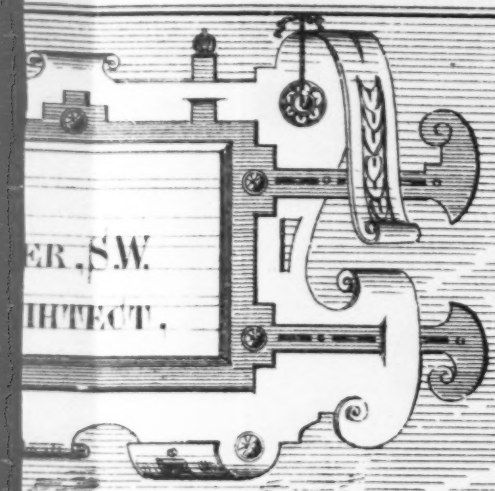
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& WESTMINSTER BANK, LIMITED.

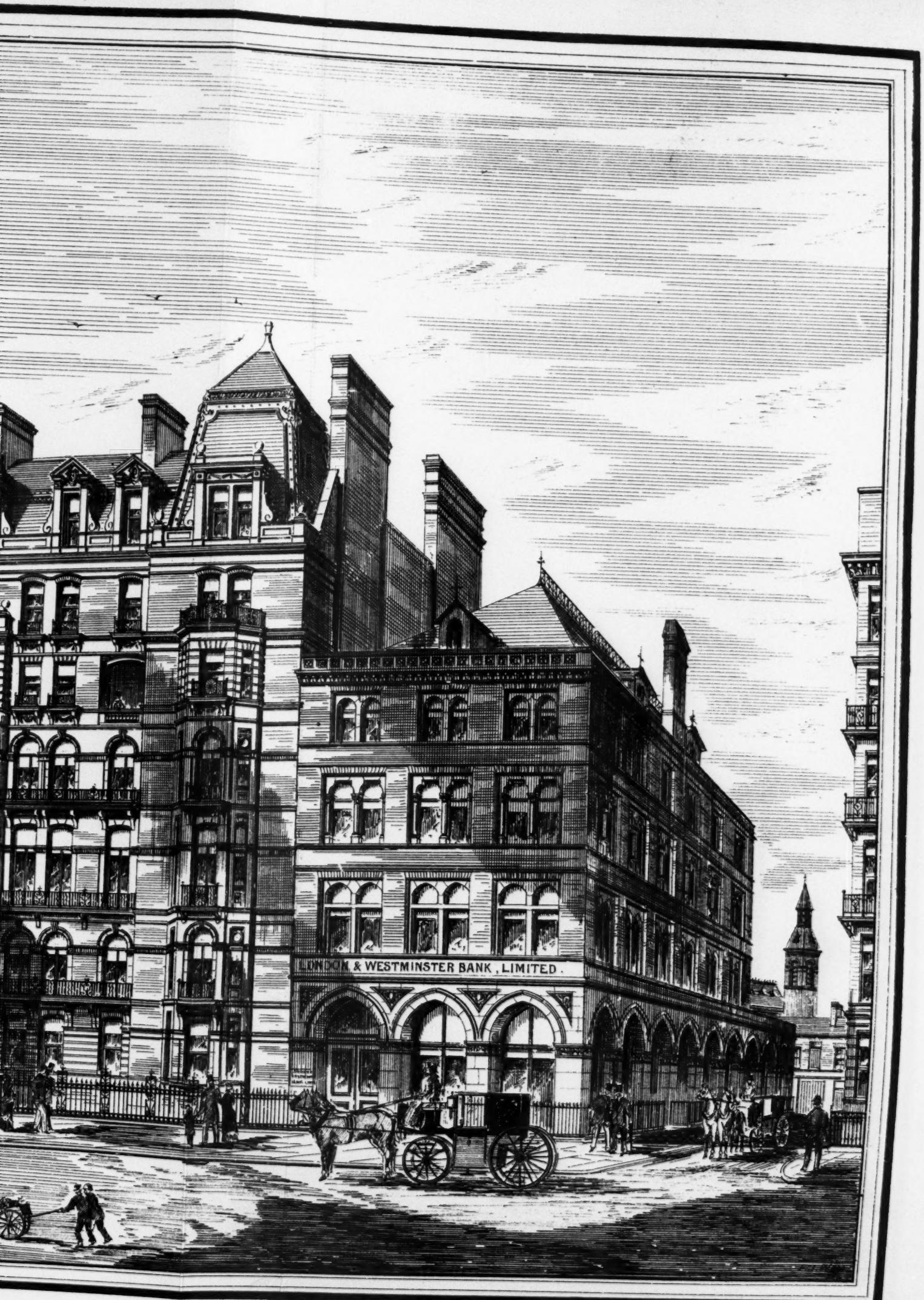


PHOTO-LITHO. SPRAGUE & Co. LONDON.

## THE CHESTER MEETING OF THE ROYAL ARCHÆOLOGICAL INSTITUTE.

THIRTY years ago the Royal Archæological Institute visited Chester, and made it the headquarters of one of its annual peripatetic conferences. In the interval which has elapsed, the good old city on the Dee has, of course, received visits innumerable from other archæological and antiquarian societies, and although the city, in a general way, is well known to the younger generation of Institute members, and to antiquaries at large, it was about time that the Institute again assembled there in a corporate capacity. A melancholy interest attaches to the congress now in progress under the shadow of St. Werburgh's Minster, for it is being held on the invitation of the late Dean Howson, to whose memory feeling reference was made in the course of the opening proceedings.

The President of the Congress is the Duke of Westminster, who, although he modestly disclaimed any pretensions to be considered an archæologist, yet nevertheless succeeded in opening the congress with an address which, for suggestiveness and grasp of subject, could hardly be excelled by similar productions by men more closely identified with antiquarian pursuits.

The Congress, as usual, comprises three sections, viz., the Antiquarian Section, presided over by the Right Rev. Dr. Stubbs, F.S.A., Bishop of Chester; the Historical Section, presided over by Dr. E. A. Freeman; and the Architectural Section, of which the President is Mr. Beresford-Hope. The secretaries of the last-named section are Messrs. A. E. Griffiths and T. M. Lockwood. The last-named gentleman has, in conjunction with Mr. John Hewitt, produced for the use of the visitors some interesting "Notes" on some of the old buildings of Chester, illustrated with facsimiles of original sketches by Mr. T. Bailey and others.

So far the meetings have been very largely attended, the members and visitors taking part in the proceedings, including Prof. C. T. Newton, C.B., Sir James Picton, F.S.A., Mr. John Douglas, Mr. Arthur Cates, Mr. R. P. Pullan, the Rev. Precentor Venables, the Rev. Prebendary Scarth, the Rev. G. F. Browne, B.D., Professor Clark, and other gentlemen well known in connexion with architecture and archæology, besides a number of visitors from the Colonies.

The proceedings commenced with the usual formal reception of the Institute by the Mayor and Corporation, on whose behalf an address of welcome was read by the Deputy Town Clerk. The address contained the following passages:—

"We, the Mayor, Aldermen, and Citizens of Chester, in Council assembled, desire to offer you a cordial welcome on the occasion of this your second visit to our ancient city.

To the annual meeting you honoured us by holding in our midst nearly thirty years ago we ascribe largely the impetus given to local archæological research and study, which, under the auspices of our district society, has borne valuable fruit, many discoveries of antiquarian interest having been made which throw additional light on our local history.

Whilst we cannot but regret that some of our ancient landmarks have since disappeared,—notably the old tower of St. John's,—this inevitable 'wreck of time' is in some measure compensated for by many new architectural works meantime effected in our city, eminently the restoration,—carried out under the superintendence of the late lamented Dean Howson,—of the venerable cathedral of Saint Werburgh; the thoroughly artistic restoration of the ruins of St. John's Priory by the late Marquis of Westminster; the erection of the Town-hall, in which we have now the pleasure of receiving you; of the King's School opposite; and of the Grosvenor Museum,—opened only yesterday by his Grace the Duke of Westminster,—hopefully regarded as the future home of all discoveries past and future worth preserving, and as the local centre for study of antiquarian and kindred subjects.

We may also point to the general improvement in architectural style during the period referred to, represented by happy restorations or reproductions after the manner of olden times.

We are proud to think that in the person of the President of your Antiquarian Section you have a scholar of high mark, whose name as Bishop of Chester will always be associated with our city, and that, side by side with him, it is our privilege to welcome, as President of the Historical Section, his successor in the Professorial Chair of History at Oxford University.

There seems a peculiar fitness in our receiving under this roof during the same week two such distinguished bodies as your Institute and the representatives of the Colonial interests of the empire, thus blending together at one gathering on Thursday next the preservers of the historic past of Great Britain, and the maintainers and pioneers of the Greater Britain beyond the seas.

We most sincerely hope that not only in Chester,—the Deva of Antoninus,—but in the county and the neighbourhood, you will, during your brief stay, find much to interest you, and that you may long cherish kind and pleasant remembrances of your visit."

Mr. Henry Taylor, one of the local secretaries, then read the following address of welcome from the local society:—

"To the Right Hon. Earl Percy, P.C., F.S.A., and the Members of the Royal Archæological Institute of Great Britain and Ireland.

We, the Chester Archæological and Historic Society, hasten to extend a most cordial greeting to you in this your second visit to this ancient city. The interest evolved in the study of local archæology by your former meeting has been the means of further elucidating the history and antiquity of our city and county, and we venture to think that much good work has been done during the thirty years that have elapsed since you last held your meeting here. The frequent discovery of 'remains,' notably of the Roman period, the opening up of the Roman road at Eddisbury by the late Mr. Kirk, the interesting discussions which have recently taken place relative to the age of the city walls, and lastly the conclusion of the third volume of our Transactions, all testify to the work our society has attempted to carry out in furtherance of the study of local archæology.

The opening of the new Museum of Archæology marks a new era in the history of our society, which we trust will infuse renewed energy in our efforts of research.

We sincerely hope that you will, during your stay, find much to interest you in this city and neighbourhood, and that you may carry away pleasant recollections of your visit to Chester.

Signed (on behalf of the Chester Archæological and Historic Society), the 10th day of August, 1886.

W. CESTR, President."

Earl Percy, the President of the Institute, in acknowledgment of the addresses, said he had to express on behalf of the members of the Institute the very great thanks for the kindly words of welcome which had been accorded them. The members of the Institute who could remember the last occasion upon which they met in Chester carried away and still carried in their recollection very pleasant reminiscences of that visit. The district surrounding them, the city in which they stood, and the adjacent counties, abounded in subjects of interest from an archæological point of view second to none in Great Britain. Great events which had moulded the history of England had left their marks upon Chester, Cheshire, and the surrounding district. But there was one circumstance which, perhaps, marked out that part of the country, and distinguished it from other parts, and that was that they had to solve the difficulty which met them in these days, marching with the progress of the times, and at the same time respecting the relics of the past. These two were almost incompatible, and they had heard in the addresses read to them that in one or two instances it had been necessary to sweep away some of those relics to which he had alluded; but he had always heard that the county could boast of ancient and Mediæval remains, and those buildings which told them of the gradual growth and the change of English society,—from the days when the country gentleman was not a country gentleman such as the term was now understood, and was always ready to fight for his country, and, unfortunately, for the settlement of any little quarrel, down to the time when he and society had developed to such an extent as to make modern life assume the aspect which their noble President had made it assume in the country which surrounded the magnificent city of Chester. There was one circumstance in connexion with their visit which mitigated in no small degree the pleasure they felt in their visit. They had expected, when they originally decided to accept their kind invitation, that they would have seen one face that now, alas! was absent. The invitation was, to a great extent, so cordially accepted because it was a suggestion of the late Dean of Chester, who at the same time promised to do all he could to welcome them, and to make their visit pleasant and their proceedings assume a character which they hoped they always would assume. And those who knew the late Dean could not but regret that they were deprived of that learning which he was always ready to place at the disposal of those who met him,—a learning which was on the one hand profound, and was, on the other, always so modestly put forth. He was quite sure that could the Dean but be amongst them, he would be rejoiced to know that the heartiness of the welcome which he would give them had been given by others in that room, and he sincerely trusted and fully believed he expressed the feelings of the members of the institution when he said that they were considerably gratified on learning that in that district the last visit they paid was held to have done something to promote the objects they had in view. He wished to congratulate the Institute upon the benefit they enjoyed in getting the noble Duke to accept the office of president. He knew how to make such occasions as those successful, and the interest which he always took in the instruction of his fellow-countrymen, and the interest which he showed in objects of antiquity, were proved by his so largely contributing to the formation of the magnificent museum which he opened on the previous day. He had always taken an interest in these things, and he had shown that works of restoration could be done without the destruction of remains of antiquity, as evidenced by his own magnificent mansion at Eaton.

The Duke of Westminster then delivered his presidential address, which was as follows:—It is my privilege, as Lord Lieutenant of the County Palatine, to welcome to the ancient city of Chester the Royal Archæological Institute of Great Britain. The associations of this city in which we are assembled, the "heir of all the ages" as we regard it, remind us that archæology, "the science of past time," is, after all, a comparative term; for, though we can carry back our history for several centuries, such antiquity is comparatively modern by the side of the antiquity of Egypt, Assyria, and China, which were at the pinnacle of greatness when the Roman power was yet in the womb of time. It is not my purpose in this address to enlarge upon the value and importance of archæological study, the position it should hold in a well-planned system of liberal education,—its relation to historical study,—the light it throws upon the past ages,—the bearing it has upon politics, which appear so essentially a science of the present time, though a moment's thought will suffice to show that the present cannot be dissociated from the past out of which it has grown, and that the study of the past can at least teach us what to avoid, if we cannot always find something to admire and imitate. Archæology has been often the subject of some pleasantry, because at times its too ardent students have given rein to their speculative genius in the region of the absolutely unknown. There is, however, abundance of work, interesting and valuable, in seeking to establish accuracy about facts supposed to belong to the region of the known, and in discussing the conclusions drawn from those facts in the light afforded by recent discoveries. This we may do with advantage as regards Chester, which is very much more than a mere name. I agree with the opinion that it is far more interesting to look upon a town not as a place where a church or a castle can be found, but as having its own personal history, like any individual inhabitant, differing only in this,—that it counts its time not by decades of years, but by centuries; and that, while generations of citizens pass away and disappear for ever, the old city, like a phœnix, may find ever-renewed life even out of its ashes. A glance back over the facts known of the history of this old city shows how important a place it was, as might be expected from its commanding position, and what stirring scenes it has witnessed during the last nineteen centuries. We are told how, so early as A.D. 43 and 48, it had its share in the military arrangements of the Roman commanders, Aulus Plautius and Ostorius Scapula,—how it was the *point d'appui* of Suetonius in his expedition against the Druids of Anglesea,—the head-quarters of the Victorious Legion, the legion whose vexillarii took an important part in the defeat of Boadicea, the brave British queen. We know that while Jerusalem, the Holy City, was being besieged and destroyed (A.D. 70), Chester streets resounded with the tramp of Roman legions,—that tribute was being brought from the conquered British tribes, some never reaching the Roman treasury, but sinking, on its way thither, to the bottom of the river, only to be found some 1,800 years afterwards, like the pig of lead discovered the other day by the

Gasworks at Chester, the exact counterpart of that preserved at Eaton, and stamped with the date of the Emperor Vespasian, and with the name of the tribe Ceangi, whose tribute it was. Our archæological friends find traces of this occupation, not only in the name Chester, Castra, the camp *par excellence* (the Welsh called it Caer Lleon Vawr, *i.e.*, the camp of the Great Legion), but also in the arrangement of the streets (St. Peter's is on the site of the Prætorium); the inscribed altars, which have been dug up; the hypocaust; the crocks of coins; the great roads leading to and from the city which, in a manner so characteristic of those who constructed them, still strike like arrows over hill and plain, unswervingly and perseveringly, to their point. I might be expected to have added to this list of the relics of Roman occupation, the walls. We shall hope to hear this week some authoritative opinion on the question of the walls,—how far they are Roman. The city must have had some walls. But do any traces of those Roman walls remain, and are they to be found *in situ?* We shall hope to hear from our learned visitors about the Ceangi, whose home comprised three of the North Welsh counties, Carnarvon, Denbigh, and Flint; about the long dark period (476–900) which followed when the Roman occupation ended, and the Twentieth Legion and others were withdrawn finally from Britain because of the troubles near at home. Was that withdrawal (the end of the military occupation) an advantage to this country? We imagine not. The strong hand was needed then, if ever. They were troublous times, we may conjecture, from two or three facts which are known to the ordinary reader (the references to civil war among the several chieftains, and the appeals to the Romans for assistance, "The Groans of the Britons"). Then, again, about the Irish pirates (or Scots, as they were then called) who devastated the Western shores? How often must they have come with fire and sword, harrying and carrying? Was there, then, any other connexion or traffic with Ireland? Was Chester as important a trading centre in the second century as York is said to have been at that time, when the wines of the Levant, woollens of Asia Minor, the purple of Tyre, the cambric of Cos, the spices of India, the slaves of Africa, the silks of China were as abundant on the Ouse as they were on the Tiber. What about the laws and institutions after the Roman withdrawal? Were they Roman or Celtic? What was the language spoken? Did the Latin language take any hold upon the country at that time? Was the religion Christian or heathen? Were any left in Britain of those Christian soldiers converts to whom St. Paul had preached as a prisoner at Rome? We come down to the Danish occupation. The desolation when the Danes came on the scene must have been sad and pitiable. Chester was a ruined city in 895 when the Danes, flying before Alfred the Great, took refuge in it, and attempted to defend the place against the King. They soon retreated to North Wales, and left it ruined,—they were no restorers. In this ruined state Chester continued until the Amazon Ethelfloeda, Alfred's daughter, "Lady of the Mercians" (who built castles at Eddisbury, Runcorn, &c.), restored and beautified it, and repaired the walls, following the line of the Roman fortifications. How far are the existing walls hers, or even of later date? Some seventy years later (971) we come to a grand epoch in our city's history. Will archæologists come here to tell us that the tale is not true which is so flattering to our pride? Did Edgar, "the Emperor of Britain," make his six or eight feudatory princes (Kenneth, king of Scotland, Malcolm of Cumberland, Maccus of the Isles, and five Welsh princes) row him (as we read in Campbell's History of British Admirals) up the Dee in a barge to St. John's Church? Again, what have they to tell us of the course of the Dee,—was it (as in some old maps) one with the Mersey, and did it cover, near the city walls, a wider area or follow a different channel? What light is thrown by the name Ince (Ynys, Welsh for island), and the claim of the Abbot of St. Werburgh in Edward III.'s reign to the sea? We come to a better-known period,—the time of the Norman Conquest. We are proud to remember that Chester stood out to the last—"the one great city" against the Norman invader, but it was at last taken and given to Hugh Lupus on condition that he should keep the Welsh maranders in check. But even here we have to ask: (1) What are we to believe about the story of Harold surviving his wounds at the battle of Hastings and spending his remaining days as an anchorite in a cell near St. John's Church? His wife Algitha, we may remember, was the granddaughter of Leofric, Earl of Mercia, and Lady Godiva, and in this way he had some connexion with Cheshire. (2) Were the forests which covered so large an extent of Cheshire (not only the great Delamere Forest [of Mara] but that which made Wirral a desolate waste) until they were cleared away by the energetic prudence of Edward III. in his campaigns against the Welsh,—did these exist in Roman and Saxon times, or were they planted by the forest-loving William? Such a question suggests the difference between the Cheshire of that reign and the Cheshire of to-day. Instead of trim, well-cultivated fields, and pastures for cattle and sheep, and comfortable homesteads, a wild, half-reclaimed country with few habitations, and those few miserably built,—a huge forest reaching from above Worcester to meet Delamere,—the wild bull and boar, wolf and bear, its dangerous tenants. Stoutly though Chester resisted William the Conqueror, once brought under Norman rule, it became intensely loyal and a strong bulwark of his power. Few places so far distant from the metropolis have been more highly honoured by visits from royal and distinguished persons, or have received more frequent marks of favour than Chester. A port when Liverpool was "a creek," Pennant speaks of Chester as "a constant rendezvous for troops and *place d'armes* for every expedition on this side." Thus Edward I. visited Chester in 1282-3-4. Here in 1300 he received the final submission of the Welsh. In 1394, Richard II. selected 2,000 Cheshire archers as his bodyguard. But loyal as Chester folk were, we must not forget that the population became somewhat mixed. An asylum or sanctuary was established to which felons flocked. So great a nuisance did it become that in Henry IV.'s reign complaint was made to the King of "the many murders, robberies, batteries, and other riot done by the people of the county of Chester to divers of the King's liege people in divers counties of England." Lewis Glyn Cothi, a Welsh bard, describes Chester as "the habitation of the seven deadly sins." We may well congratulate ourselves on the peaceful times of Queen Victoria,—thankful that law and order prevail; that the intolerable miseries and sorrows of the poorer classes in these times have been abated; the sense of insecurity removed; that it would not be necessary now to fear, as in 1130, the irruptions of the Welsh which made Pulford so unpleasant a residence for the monks that they migrated to Dieu Lacresse, or to qualify leases and warranties (as may be seen from deeds in the Muniment Room at Eaton of the time of Edward II.) with the condition that "peace continued." [The lessee in 1299 was bound to keep up the buildings *nisi tempore guerre fuerint combusta*, unless they were burned in time of war; and rents were payable only *tempore pacis*.] The arrangements for the excursions of the members remind me that the present area of Cheshire is much circumscribed. Once a part of the great kingdom of Mercia, ruled at one time by Penda, the champion of heathendom before whom one Christian king after another had fallen,—later by Offa (757–819), on equal terms with Charlemagne, by whom he was styled "the mightiest potentate of the West,"—then by Edgar, of whom we have spoken, this city could not fail to have been the scene of many battles and sieges. Under the Palatine Earl, if not before, the county included a portion of Wales within its jurisdiction. When, therefore, we visit Rhuddlan Castle, we shall not be going out of the boundaries, if we may say so, of Old Cheshire. Rhuddlan was given by Hugh Lupus to his warlike lieutenant, and in later days was held by a Cheshire knight, Randall, with a motley following of fiddlers and musicians, against Llewellyn and his Welshmen. Mold, too, which was another dependency of Hugh Lupus, came into unpleasant collision with Chester on more than one occasion. In 1465, it was held by a daring marauder, Reginald Meredyth Griffith, who plundered all who were obnoxious to him, and who made the Chester people the special objects of his unwelcome attention. A number of tradespeople from Chester repaired to Mold fair to dispose of their wares. This was an excellent opportunity for Griffith. A quarrel was raised,—swords were out at once,—blood was spilt. Griffith captured the worthy Mayor of Chester, Robert Browne, who had attended the fair as a draper. Mr. Browne paid the penalty for his fellow-citizens. Hurried up to the Tower after the fight, he was hanged without ceremony on an iron staple fixed in the ceiling of the great wall. Shortly afterwards an attempt was made by Chester men to avenge this murder. Two hundred stout and active men left Chester, but they were entrapped into Griffith's house, which he himself set on fire, and they were all but a few killed without mercy. Such were the relations between Chester and Mold in 1465. Our proposed visit will be much more peaceable. If we carry back anything it will be, I hope, some voluntary offering for the Museum which was opened yesterday. We have succeeded at last in raising a commodious building, which will be most useful as a receptacle for curiosities and antiquities connected with the district which might otherwise be lost. Architecturally it will be a handsome addition to our public buildings, and if the well-considered designs of the committee in connexion with the teaching of science and art in their various branches are carried out it will enable Chester to take a high position as an educational centre, and thereby confer a great benefit upon an extensive district. I have said nothing in this address about the ecclesiastical or the literary history of the city, the Mystery Plays of Higden, the names of the eminent and famous men who have been born in the county,—Chancellor Egerton, Prynne, Bradshaw, and Jeffreys. But may I refer to the able work on "Roman Cheshire," which is being brought out by Mr. Thompson Watkin, author of "Roman Lancashire," and which promises to be a valuable supplement to the standard works of Ormerod, Earwaker, and Baines; and the useful pamphlet on "Inscribed Stones," brought out by Mr. Williams? I will conclude by repeating the cordial welcome which it gives me great pleasure to offer to the members of the Archæological Institute on behalf of the county of Chester, and to assure them that we shall look with interest for the instructive papers which they are doubtless prepared to read before us.

On the motion of Earl Percy, seconded by the Mayor, and supported by Mr. W. Beaumont (Warrington), a vote of thanks was given to the Duke of Westminster for his address.

In the afternoon the visitors made the circuit of the city walls, visited St. Mary's Church and the Castle, and examined some of the interesting old houses of the city. In the evening the Historical Section was opened by its President, Dr. E. A. Freeman, who gave a brilliant address on the history of Chester.

On Wednesday a party, numbering about 130, visited Valle Crucis Abbey, Llangollen, Chirk Castle, and Wrexham. In the evening the Antiquarian Section was opened by the Bishop of Chester with an address; and in this same section an interesting address on "Early Sculptured Stones in Cheshire," was read by the Rev. G. F. Browne. In the Historical Section, Mr. H. Taylor read an interesting paper on "Grants of Land in Wales to Englishmen by Edward I."; and Sir James Picton followed with an equally interesting one "On the Ancient Commercial Relations between Chester and Liverpool." Of these papers we will make further mention in our next.

The annual meeting of the Institute was held on Thursday morning, when Salisbury was definitely decided upon as the scene of next year's meeting, Norwich being mentioned for 1888. Subsequently the Architectural Section was opened by its President, the Right Hon. A. J. B. Beresford-Hope, M.P., who delivered an interesting and humorous address, depicting the difficulties of reconciling all the wishes of archæologists with the paramount claims of sanitation. We necessarily defer our report of this address until next week.

The assembly-room of the Town-hall is set apart for the display of an interesting loan collection of antiquities, to which we shall make further reference.

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**Sir Philip Magnus.**—The honour of knighthood has just been conferred upon Mr. Philip Magnus, in recognition of the important work which he has done during the last few years as Director of the City and Guilds of London Institute for the Advancement of Technical Education.

## SURREY ARCHÆOLOGICAL SOCIETY.

The recent excursion of this Society, as briefly mentioned in the *Builder* of the 6th instant, was to Guildford, under the presidency of Mr. John Mason, Mayor of that town.

St. Mary's Church, Trinity Church, Mr. Bull's house in the High-street, Abbot's Hospital, and the crypt under the Angel Hotel, were thrown open during the morning for the inspection of those who arrived by the early trains. St. Mary's Church, situated on the declivity of a hill, will be found described in the *Builder*, July 14th, 1855, on the occasion of a former visit of this Society.

Trinity Church, a large red brick structure, contains the altar-tomb of Archbishop Abbot. This church is now proposed to be enlarged, and the drawings, by Mr. A. W. Blomfield, were shown to the visitors. The suggested treatment of the church is described in another column.

Mr. Bull's house in the High-street was formerly a fine mansion of the Jacobean period, now converted into a shop. The old carved oak staircase, ceiling, and wrought ironwork, and inner courtyard are still to be seen.

Abbot's Hospital was inspected, as also an ancient stone crypt under the Angel Hotel, which is now "undergoing restoration." The members and visitors now assembled in pretty strong numbers, and were conducted by the Mayor to a quadrangle at the rear of the old Royal Grammar School, where, after a few words of welcome, he congratulated the town and the Society on the recent purchase of the castle. He supposed some of the old Guildford people would almost as soon sacrifice their lives as see their castle go; and he was sure the Corporation of Guildford would have been very unwise indeed if they had not purchased that historical ruin. He concluded by introducing Mr. D. McLure Stevens, who read a paper on the "Royal Grammar School." He said, before the time of Henry VIII. there appeared to be no free school in Guildford, and the want of one attracted the attention of Robert Beckingham, a wealthy citizen and grocer of London, who, during his lifetime, gave to "the mayor and approved men," a house and tenement near the castle ditch, and by his will, proved in 1509, devised a rent charge upon lands at Bromley, Kent, and Newington, Surrey, for the purpose of erecting and maintaining a free school in the borough of Guildford. The founder does not appear to have lived in Guildford; he was probably interested in it through the Austen family. John Austen was one of the executors to his will. In 1520 "the mayor and approved men" gave a large piece of land near the house given by Beckingham, in Quarry-street, and on this piece of land a school-house was erected. In 1550, Henry Polstead gave two messuages, near the pillory, in the parish of St. Mary, towards the maintenance of the old school. Through the instrumentality of William, Marquis of Northampton, of Guildford Park, and Sir William More, of Loseley, King Edward VI. became a benefactor. The grant from the king bears date January 27, 1552-53. The appointment of the master and undermaster was by this charter vested in the mayor and approved men and the warden for the time being of the king's manor of Guildford. It should be noted that the charter fixes the date of the foundation of the school; therefore, the date over the front entrance of 1550 is a mistake. "In 1557," says George Austen, in his manuscript, "the mayor and approved men, at their own costs began the large roome, now the schoolhouse, with the great chamber and garrett over the same, and the same healed with Horsham stone, and therein made many varie faier windows of freestone, well glased, the walles of which scholehouse are all of brick and stone, of a very stronge, statelie, and faire buildinge. The charge was above 400 marks." In this same year one Thomas Bignold, in the quaint language of Austen, gave an acre of land in the common field of Shalford, near Poyner's Pitt, "and took it again in lease for 999 yeares at the yearly rente of xxd." This sum is duly paid to the trustees by Colonel Godwin-Austen. After quoting further legacies from the same MSS., Mr. Stevens said, in 1574, died John Parkhurst, Bishop of Norwich, who by his will gave 20*l.*, and all his Latin books to the school. Dr. Parkhurst was born in the parish of St. Mary, Guildford, and was educated in the old free school in that parish. In addition to his gift to the Royal Grammar School, he bequeathed to the mayor and approved men of Guildford his best basin and ewer of silver, which have been carefully preserved. In 1581, Simon Talley, vintner, and Mayor of Guildford in 1576, finished the usher's lodgings at a cost of 10*l.*, and in the following year, 1582, Robert Broadbridge, clothier, twice mayor of the borough, did substantially glaze the windows belonging to the usher's lodgings. In 1586, the master's lodgings and the library were completed at a cost of 72*l.* 6s., which sum was collected by George Austen from county and other ladies and gentlemen. After quoting other legacies, Mr. Stevens said the original copy of the statutes for governing the school is still in the custody of the Clerk to the Trustees; they are written bookwise on parchment, which is in excellent preservation, dated September 21st, 1608, and bear the signature of Thomas Bilson, the then Bishop of Winchester. Mr. Stevens concluded by giving a catalogue of the Masters, from Manning and Bray, and enumerating a few of the many great and distinguished men who received the ground part of their education at the Royal Grammar School: among them being Robert Abbot, Bishop of Salisbury; George Abbot, Archbishop of Canterbury; Sir Maurice Abbot, John Parkhurst, Bishop of Norwich; Henry Cotton, Bishop of Norwich; William Cotton, Bishop of Exeter, &c.

The Mayor next conducted the company to the old Guildford Castle, where in the Castle keep Mr. Ralph Nevill, F.S.A., in an able extempore address, fully described the ruins and their history, which are tolerably well known to readers of the *Builder*. Carriages were then in attendance, and the whole party were driven first to Shalford Mill House, where the present occupier, the Rev. S. C. Musson, said this house was chiefly interesting for its splendid old carved oak staircase, panelled rooms, doors, &c. On one of the panes of glass was scratched the name of "Dr. Swift," which was believed to have been done by Dean Swift when he lived at Farnham. From Shalford the company proceeded to the old Manor House at Tangley, which was so ably described and illustrated by the late Mr. Charles Bailey, architect, in the fourth volume of this Society's collections. The house bears the date 1582 on the front, and there is reason to believe that some parts of it are of earlier construction. All that is left of the original house consists of the old hall and the adjoining spacious panelled drawing-room. The hall had been open to the roof; the screen and a massive trussed king-post beam are to be seen, the latter in one of the bedrooms. On one of the diamond-shaped panes of glass is the name of "John Evelyn," with the date, 1641. Having re-crossed the moat, the members and visitors proceeded to Chilworth Manor House, and walked thence up a hill to S. Martha's Church, which was open for inspection. This church of Norman date was restored about twenty years ago. From S. Martha's the party descended the hill to Titing or Tything, and returned to Guildford. The proceedings of the day were carried out under the management of Mr. Thomas Milbourn, hon. secretary; Mr. D. M. Stevens, local hon. secretary; and Mr. W. P. Ivatts, the collector of the society.

## THE GROSVENOR MUSEUM, CHESTER.

Appropriately enough, the first public proceedings in connexion with the opening of the Grosvenor Museum of Natural History and Archæology (the building also affording accommodation for Schools of Science and Art for Chester), took place on Monday last, on the eve of the opening of the Chester meeting of the Royal Archæological Institute. The building has been designated the Grosvenor Museum in recognition of the munificence of the Duke of Westminster, who has contributed largely to the building fund. It was but fitting, therefore, that the opening ceremony should be performed by the Duke. A very good exhibition is arranged in the several galleries, comprising not only local antiquities and unique specimens pertaining to natural history, palæontology, and geology, but a very good collection of pictures and other works of art, lent by the Duke of Westminster, the Royal Academy, and the Science and Art Department of the Government,—the contribution of the Department being very large and excellent, especially in the domain of pictures in water-colours.

The new building is in every way excellently adapted to its purpose, and reflects credit upon its architect, Mr. T. M. Lockwood, of Chester. The following detailed description of the building has appeared in a Liverpool paper:—

"The façade on the Grosvenor-road is in a style peculiarly suited to the general picturesque character of the ancient city, being designed upon the lines of the old Dutch Renaissance so prevalent in the street buildings of Holland in the seventeenth century, before the Mediæval mullions had given way to the more stately but less picturesque characteristics of the severer Classic style. The quaint form of the gables and the cupola to the octagon window at the end of the building also help to diversify the character and add to the picturesque outline of the building. The front entrance is through a semicircular archway nearly 8 ft. wide, filled in with wrought-iron gilded gates, and surmounted with carved and enriched archivolt, having its spandrel filled in with bas-reliefs of female figures representing science and art; the frieze over this has carved and ornamental panels, with the arms of the county and city inserted, whilst the pediment over contains the Grosvenor arms. The slight projection of the porchway is carried up to the top of the building, and is there finished by a quaintly-formed stone gable filled in with bold carving suited to its position, flanked on each side by carved griffins. The whole of the windows are of great width for abundant lighting, and are broken up by mullions and transoms, with internal divisions of window bars, which accord with the style. The upper lights excepting those to the Art School, are filled in with leaded lights and stained glass. The upper story of the building is divided into bays formed by stone pilasters with carved capitals, and the cornice surmounting the whole is bold in character finished with balustrade on the top, and a carved and enriched frieze below, the whole being broken up by the two gables before named and the octagon turret, which also serves to veil what would otherwise be an awkward angle caused by the irregular shape of the site. In the front a good balance of colour is shown by the variety and adjustment of the materials, which are of red Ruabon brick for the walling, whilst its cornices, pilasters, and other ornamental features are of Grinshill Hill stone, which form a pleasing contrast in colour. The whole of the carving and sculpture to the front and throughout the building has been well carried out by Mr. Edward Griffith, of Chester, from the designs of the architect, and its execution is of a very high character. The entrance to the building is through a vestibule 9 ft. in width, up a flight of seven steps, upon the landing of which is placed a screen filled in with lead lights and stained glass of good colour and character. Immediately beyond is a large entrance-hall and staircase, 23 ft. in width, with circular end. This staircase hall gives a pleasing importance to the building, and is of a highly ornamental character. The floor is laid with mosaic tesselated pavement of small tesseræ, with ornamental border round the hall, with a central ornament in which the arms of the city are introduced, a small mullioned window at the end giving light to the anteroom through stained glass, in which the arms of the city and county are emblazoned, with a quaint motto wrought into the lower panes:—

'Tis education forms the common mind:
Just as the twig is bent the tree's inclined.'

The staircase, which goes round the circular end of the hall, is deserving of a passing notice. It is formed of concrete, supported internally by means of wrought-iron girders built into the wall in the centre of each step, and is thereby much stronger than if built of solid stone. Each step is covered with a hard York stone tread. The balustrade is specially designed and ornamented in a characteristic manner. The entrance-hall and the first flight of stairs are finished with a dado of mosaic work in quiet tone, to harmonise with that in the floor before named. The stairs and hall are well lighted by a top light from roof, which yields abundance of light and gives a cheerful impression on entering the building. The accommodation provided for the various societies in the building may be briefly described as follows, and is comprised on three floors, besides a number of good, well-lighted rooms in basement, available for stores and mechanical work required for the various schools, &c.:—On entering the building there is a reception or reading room, 21 ft. by 19 ft., on the left, and on the right is a natural history museum,

36 ft. by 25 ft.,—a well-lighted room, with stained glass in the upper portions, filled in with mottos appropriate to this department. Beyond this is the lecture-theatre, 45 ft. by 30 ft., having two distinct entrances from the entrance-hall, besides platform-entrance and preparation-room behind on the lower story. The theatre is well lighted by large windows filled in with lead lights, and the auditorium specially arranged in steps so formed that all may have a view of the demonstrator's table at the bottom; the seats are most convenient, each being separate, and having a small falling desk to enable students to write their notes upon. From this room there is a lift to the chemical laboratory on the floor over. On the ground-floor there is a large room opening from the main hall, devoted to the exhibition of pictures, for which it is specially contrived, being lighted by a good top light, and boarded all round to enable pictures to be easily attached. This room will be temporarily used as an archæological museum. The first floor is devoted entirely to science, excepting one room, 20 ft. by 19 ft., to be used as a library and committee-room, and one room, 25 ft. by 14 ft., used as a model-room for school of art. The chemical laboratory is 30 ft. wide, and has an area of 520 square feet, and there are two class-rooms with an area of 1,170 ft. The upper floor is entirely devoted to the school of art, and consists of a large room, 66 ft. 6 in. long and 25 ft. wide, and 20 ft. in height, lighted from the northwards; besides this there is a master's room, 14 ft. 6 in. by 12 ft., formed with bay, commanding a view of the whole of the teaching space, and also a small room with top light for the use of the master. The whole of the floors are fire-proof, with wrought-iron beams and Dennett arching, which prevents the transmission of sound between the various floors. The artificial lighting is by means of the Wenham patent gaslight suspended from the ceiling of each of the rooms, which gives a brilliant light at a most economical consumption of gas. Special provision has been made for warming and ventilation by means of Haden's system of low-pressure hot-water pipes, with coils of pipes placed in various places, and the ventilating system is by means of a large extraction shaft into which air-ducts from the various rooms are conveyed. The contract for the building has been satisfactorily carried out by Mr. Edmund Gabbutt, of Liverpool, the general contractor, the special work being executed by the following sub-contractors: — Fireproof construction by Messrs. Dennett & Ingle, of London and Nottingham; warming and ventilating by Messrs. Haden & Son, of Trowbridge; carving and sculpture by Mr. E. Griffith, of Chester; wrought-iron gates and grilles by Messrs. Thos. Wood & Son, of Chester; stained and ornamental glass by Messrs. Shrigley & Hunt, of Lancaster; locks and ironmongery by Charles Smith & Sons, of Birmingham; mosaic floors and dados by Ludwig Oppenheime, of Manchester; gasfittings by Messrs. Box Bros., of Chester; the whole work being carried out under the direction of Mr. Lockwood."

We hope to give a view and plans of the new building before very long.

**A Question of Tendering.**—A novel point has just arisen between the Vestry of Islington and some building contractors with regard to the legality of tendering. Tenders were invited by the Vestry for certain repairs to the Vestry Hall, and seven contractors submitted prices Messrs. M'Cormick & Sons tendered 385*l.*; Messrs. Grover & Son, 349*l.*; Messrs. Dove Bros., 335*l.*; Messrs. T. Wontner Smith & Son, 319*l.*; Messrs. A. Coombes & Son, 319*l.*; Messrs. Charles Dearing & Son, 311*l.*; and Messrs. Lown & Son, 293*l.* The last-mentioned tender was accepted, but one at least of the other contractors urges that as the successful tenderer did not appear at the Vestry Hall either personally or by representative at the time of the declaration of the Vestry's decision, he was not entitled to compete. The terms of the advertisement certainly are that contractors shall be in attendance, but there is no mention of a penalty in case of default.

**Guernsey Church.**—We are asked to mention, as supplementary to the particulars which we gave in our issue of the 24th ult. *re* Guernsey Town Church, that the flooring throughout, which is of oak and darkened oak blocks, was laid by Messrs. Geary & Walker, of Charing-cross, London, on their patent system.

## SANITARY INSTITUTE OF GREAT BRITAIN.

We have received the preliminary programme of the arrangements for the ninth Autumn Congress of this Institute, which will be held in the City of York on September 21st and following days under the presidentship of Sir T. Spencer Wells, Bart. The Council invite papers on subjects included in the programme.

Section I. of the Congress will be devoted to "Sanitary Science and Preventive Medicine." The President of this section is Professor de Chaumont, M.D., F.R.S.

Section II., "Engineering and Architecture," will be presided over by Mr. Baldwin Latham, M. Inst. C.E., the Vice-Presidents being Messrs. Harold Copperthwaite, M. Inst. C.E., J. Vicker Edwards, C. Hodgson Fowler, M.A., F.S.A., G. B. Styan, City Surveyor, York, M. Ogle Tarbotton, M. Inst. C.E., Colonel Walker, R.E., and Professor Henry Robinson, M. Inst. C.E. The honorary secretaries of this section will be Messrs. E. C. Robins, F.S.A., F.R.I.B.A., Mr. J. Adams, and G. J. Monson, A.-M. Inst. C.E.

Section III. will be concerned with "Chemistry, Meteorology, and Geology," and will have for its President Mr. William Whitaker, B.A., F.G.S., Mr. G. J. Symons, F.R.Met.Soc., F.R.S., being one of the honorary secretaries of the section.

The closing general meeting of the Congress will be held on Friday, September 24, and on Saturday, September 25, there will be some excursions, followed in the evening by "Addresses to the Working Classes" by Mr. George Vivian Poore, M.D., Mr. Edward C. Robins, F.S.A., and Mr. James Mansergh, M. Inst. C.E. A public dinner will probably be arranged in connexion with the Congress.

As usual, a Health Exhibition will form an important adjunct of the Conference, and will be held in the Yorkshire Fine Art and Industrial Institution Buildings, Bootham Bar, from September 21 to October 16, 1886. Mr. E. L. Box will be the curator.

## PROPOSED TUNNEL BELOW THE THAMES AT BLACKWALL.

At the meeting of the Metropolitan Board of Works, on the 6th inst., the clerk (Mr. Wakefield) read the following report of the Works Committee:—

"Your Committee have to report that, in accordance with the references made to them from time to time, they have considered the whole question of additional means of transit across the Thames in the eastern part of London, and in so doing they have had regard to the various requests and suggestions made in the numerous memorials and communications which the Board has received on the subject. After carefully looking at the question from all points of view, your Committee are of opinion that the Board should not allow another year to elapse without endeavouring to satisfy the requirements of the eastern districts as regards the means of crossing from north to south of the Thames. As the Board are aware, several points have been suggested as the most suitable for a crossing, each of which, no doubt, has something in its favour. Upon the whole, however, your Committee are of opinion that a tunnel or subway at Blackwall would be the best under present circumstances, and they recommend that the Board do prepare a scheme to be submitted to Parliament next year for the formation of a tunnel or subway at Blackwall, as suggested in the engineer's report of 19th August, 1882."

The report was adopted, after a long discussion, by 29 to 11.

## SIR JOHN SOANE'S MUSEUM.

Sir,—When will the Trustees of Sir John Soane's Museum and Library make the collection more accessible to architectural students, it now being, under the present regulations, practically useless, as it is closed for nearly ten months in the year (as it is open for only eighty days)? It will now, at the end of this month, be closed until next April.

Could not the management be vested in the Institute as to the hours of opening, &c.?

A Would-be Reader.

*** Strictly speaking, we doubt if the Trustees have any power to alter the conditions under which the founder of the Museum bequeathed it.

## ST. GEORGE'S HALL SCULPTURE.

Sir,—Permit me to correct a mis-statement into which you have been unwittingly led in reference to the sculpture of the panels at St. George's Hall.

You state that Mr. Stirling Lee had undertaken to execute them "at the very modest price of 150*l.* per panel."* This should be 450*l.* per panel, or 500*l.* each if the contract for the entire series is not carried out.

I was not present at the demonstration of vulgar ignorance at the last meeting of the Liverpool Town Council. Probably people will be surprised to hear that the whole of the designs had been already submitted and approved by the gentlemen who exhibited such a refined taste and knowledge of art as to reject what they had previously accepted and premiated.

There is, however, a further remark to be made. That the Istrian marble, which is being used for the panels, is an excellent material, calculated to withstand the atmosphere of sulphuretted hydrogen to which it will be exposed is, I believe, true; but the white colour of the insertions into the brown sandstone produces a very spotty effect, which is not pleasing to the eye, particularly as the black soot and dust, gathering on the projections, and washed by the rain, forms a hard crust in the hollows, which only constant washing can obviate.

The panels were left by Mr. Elmes with a rough rock-faced projection, no doubt for future ornamentation. They might now be sculptured *in situ*, with some simple device, which would satisfy the delicate scruples of the Town Council, and take away the unfinished appearance which the building presents.

J. A. Picton.

*Sandyknowe, Wavertree,*
Aug. 9, 1886.

## LIGHT RAILWAYS, IRELAND.

Sir,—I shall feel obliged to any one who, through your columns, will put me into the way of obtaining a more particular description of these works. I have not as yet seen any reference to the name of the engineer or engineers. C. E.

## WATER SUPPLY.

*Cookstown (Ireland).*—At a special meeting of the Board of Guardians of Cookstown Union, held on the 7th inst., the Clerk reported that he had received a report from the committee in charge of the Tullagh water scheme, which stated that they had received about a year ago a sum of 110*l.* to experiment on the Tullagh springs, in order to find how much water they would yield. They had expended altogether 95*l.* 16*s.* on that object. The report then recited the various tests and results of their experiments, from which it appeared that, on the original spot chosen, where the water in the driest weather keeps the road wet, the contractors Messrs. Le Grand & Sutcliff, London, met with a bed of gravel, which their tools were not suited for. They, therefore, decided to expend their funds in making other borings, and testing existing springs. They found that the well opened by the miners would give a constant supply of 95,000 gallons in twenty-four hours,—a supply which, if it could be depended on, would give twenty-four gallons per head of the population. They also opened two springs in the farm of Mr. Warnock, Auglish, adjoining the other wells. These were left open, and are now flowing at the rate of 50,000 gallons per day, while a new 4 in. bore-hole sunk beside the old well at Reid's gave a further supply, and as it rose higher it must be independent of the old. They recommended that the opinion of an engineer be taken as to the practicability of obtaining a supply of water from these springs, and especially whether sufficient water-power can be obtained for pumping it into the town, and at what cost for establishment and maintenance of the pump.

*Crediton.*—Mr. S. J. Smith, C.E., has lately held an inquiry, on behalf of the Local Government Board, into the water supply of this little Devonshire town. It seems that the question has been for some time before the Improvement Commissioners, the medical officers having on several occasions reported that the town had an inadequate supply. About two years since the

* We took the statement from a report of the Town Council meeting in the *Liverpool Daily Post*.—Ed.

matter was taken up by a Committee,—several of whom were Commissioners,—who subscribed sufficient funds to offer a premium of 35*l.* for the best scheme for bringing a supply of water into the town. Several engineers competed, and the premium fell to Mr. Appleton, of Torquay. The Committee afterwards handed the matter over to the Improvement Commissioners, as being the proper authority to carry out the undertaking. After some discussion the Commissioners thought that they had the same powers enjoyed by Rural Sanitary Authorities, whereby they could compel owners of property to sink wells within as reasonable a distance of their property as a sufficient quantity of water could be obtained. They accordingly resolved to ask the Local Government Board to extend to them the powers of the Act. Among the witnesses examined was Mr. H. M. Body (medical officer), who said that he knew the district well. The supply of water was obtained from wells of a depth varying from 12 ft. to 60 ft. The supply from these was very insufficient. Some of the wells were situated near drains. The majority of the wells produced pure water; but he had found the water from several wells polluted with sewage. There were not wells to every house; and there were about 1,050 wells in the town. While the better class houses had wells the poorer houses were very deficient indeed. Some had to go long distances to the two public pumps,—in many cases 200 yards or 300 yards,—(Voices: "Over 500 yards"). Mr. Body (continuing) said the water from one of the public pumps,—the one in Park-street,—was often unfit for use. He was decidedly of opinion that a public water supply was necessary. The population of Crediton was about 4,500. Mr. Tozer (Inspector of Nuisances) said he could not tell the exact number of wells in the town; he thought there were from 100 to 150—(A Voice: "Seventy-two families use the pump in Park-street"). These extracts from the evidence are sufficient to show the great need for improvement.

*Exeter.*—The large asylum which is approaching completion at "Digby's," near Exeter, has lately been the subject of much discussion at meetings of the local governing body; and among other matters the question of water supply has received consideration. Two Commissioners in Lunacy, in company with Dr. Rutherford, the medical superintendent, lately made a general inspection of the building. The asylum is intended to accommodate 300 patients of both sexes. The Commissioners state that they could get no very certain information as to the water supply, but were told that the well had been sunk to 50 feet, and a bore-hole driven 200 feet lower; but, they add, "the yield of water is so small and slow that the well can be emptied by less than an hour's pumping by the steam pump." Now, this is incorrect. The well which is to supply the institution has been sunk 250 feet, and the water is obtained at the rate of 15,000 gallons per day, which gives 42 gallons per head per day for 350 people, the number it will be necessary to provide for, including both staff and patients. It is, as Alderman T. Andrew pointed out at a recent meeting of the Town Council, a somewhat strange thing that no city officials accompanied the Commissioners when they inspected the asylum. Mr. Andrew is known to be a competent geologist, and he states that the well at Digby's is quite satisfactory in its results. It is yielding in dry weather close upon 15,000 gallons per day, which will be an ample supply for the ordinary purposes of the Institution. Mr. Andrew regards the water undertaking at Digby's as a magnificent success. The water does not appear to proceed from a spring, but percolates through the sand.—*Western Morning News.*

*Highbridge* (*Somerset*).—A few days ago, on the invitation of the engineer (Mr. Alfred Woodhouse) and the contractor (Mr. August Krauss, of Bristol), the members of the Highbridge Parochial Committee and others met at the Highbridge Waterworks to test the machinery and the mains. The works have been in progress for several months, and have now been completed, at a cost exceeding 5,000*l.* Mr. Woodhouse having given some details respecting the works, Mr. C. Ritson, J.P., Chairman of the Parochial Committee, turned on the water to fill the mains. These are altogether about four miles in length, and there are thirty-two hydrants, three of which were tested in various parts of the town with the aid of a hose for use in case of fire, and the pressure was such as to send the water a height of from 60 ft. to 70 ft.

*Southampton.*—The Mayor of Southampton lately laid the foundation-stone of the new buildings at the pumping-station of the new water supply for Southampton, adjacent to the South-Western Railway at Otterbourne. The works are being carried out from plans by Mr. W. Matthews, the water engineer, Mr. W. H. Simonds being the contractor. Describing the series of buildings of which the first stone had just been laid, Mr. Matthews said the whole range would occupy a length of about 250 ft. by a depth of 40 ft. They would be of red brick, with a certain amount of Portland stone-work. First there would be an engine-house, containing a pair of compound beam engines, each capable of pumping two millions of gallons of water daily; next a boiler-house, containing three steel boilers, with room for a fourth should it ever become necessary; then a machine-shop, fitted with lathes, planing-machines, &c., so that in case of a break-down or repairs required the work could be done on the spot; next, the most important, perhaps, of the whole series, the filter-house, where the water would be softened and purified; and, beyond, a lime-kiln, &c. Mr. Matthews gave a detailed explanation of the process of softening and filtering, which is that of the Atkins Company, whose process, as carried out at Henley-on-Thames, was recently described in our columns (see *Builder*, p. 181, *ante*). Mr. Matthews showed how large an expenditure would be involved for tanks, with such a large daily consumption as was estimated for Southampton, if the old method of clearing the water of deposit by subsidence was followed, and how readily the cleansing was effected by the Atkins system. He then spoke of the well-borings, two of which would, he said, be made, going down a depth of 100 ft. into the chalk, and they were 6 ft. in diameter, the largest borings that had ever been attempted. One would have been completed that day but for an accident to one of the tools. Of the total expenditure on the works of between 50,000*l.* and 60,000*l.*, nearly 40,000*l.* would be spent on the spot where they were now assembled.

## PROVINCIAL NEWS.

*Buxton* (*Derbyshire*).—At the meeting of the Buxton Local Board, on the 30th ult., the Chairman (Mr. E. C. Milligan) read the following letter, addressed to him by Sir Robert Rawlinson:—

"Buxton, July 20th, 1886.

Dear Sir,—I have, for a short time to-day, with your surveyor, Mr. Joseph Hague, visited and inspected your sewage works, and have been very pleased with their arrangement, appearance, and efficiency. They are the cleanest-looking works I have seen, and send out a well-clarified effluent. I naturally take some interest in Buxton, as I designed and executed the main sewers, as Engineer for their Commissioners; but it is so long since that I forget the name of the Duke's agent, and of the members of the Commission. Buxton was, however, one of the first towns sewered on the new lines I at that time had laid down,—namely, manholes, and right lines with true gradients. The site of the town is, for the most part, limestone, gunpowder having to be used in forming the main sewer trenches. This involved great care and extra cost. Then I was under the strictest injunctions not to risk any injury to the hot and other springs; and from what I have learned as to the action of the sewers, and have seen of the sewage works, I can say that no town is more perfect in its sanitary arrangements, and this is certified by your low death-rate. Mr. Hague informs me that the sewer ventilators do not cause nuisance, and that the delivery of sewage from nine o'clock p.m. to six o'clock a.m. is almost pure water, indicating that there is no deposit in the sewers, as also that the outflow from the drains and sewers is continuous. I do not suppose any human excreta remain within the area of the town one hour, but all is delivered in a fresh state at the sewage works. Herein consists the efficacy of the system and works, which are alike efficient for the ordinary resident population, and also for your season population, up to, say 20,000. This is an important feature in your works.

I must compliment you on your gas-works, which, under your continued good management, ought, and no doubt soon will, free you from any rate in aid.—I have the honour to be, dear sir, yours very truly,

ROBERT RAWLINSON."

*Frome.*—The Frome Sewage Utilisation Works are now in operation. They were necessitated through the complaints of some parishioners as to the pollution of the river by the town sewage. The cost of intercepting sewers and machinery, &c., has already been 18,000*l.*, and the work is not yet complete. The whole of the town sewage, calculated in dry weather as 250,000 gallons per twenty-four hours, is discharged under the river to a 30-in. sewer laid in Innox meadows to an outfall tank built near the pump-house. The outfall tank is of brickwork in cement covered by brick arches supported on cast-iron girders. This tank, with the sewer, will hold about 400,000 gallons of sewage. Here the sewage is mixed with lime and other chemicals, and forced up a rising main to subsidence tanks. There are two sets of pumps, each set capable of lifting 200,000 gallons of sewage per day of twelve hours. The motive-power is water: a very important consideration in regard to the future working of the scheme. The subsidence tanks, six in number, are built on the upper portions of the land, and 25 ft. above the bottom of the outfall tank. They are entirely constructed of cement concrete, rendered on the insides with cement, and are in two sets. The sewage being pumped into the first tank flows over into the second, and then to the third, and the effluent is passed from this over a weir formed of pure white brick, and then down a series of steps to the carriers. From these the clear water can be discharged over the land as well; all sewage will have to pass through the land before entering the river. A portion of the land to be irrigated has been laid out in terraces, so as to be above the flood level, and to enable the effluent to be conveyed readily thereto. At present several thousand cabbage-plants have been purchased and are being planted. We were shown similar plants that have only been in the ground for about three weeks, the growth of which has been remarkably rapid. The floors of the tanks are so constructed that they fall 6 in. in a direction opposite to the flow of the sewage. When one set of tanks is considered to have been in use long enough, and the sewage has been allowed to settle, the clear water is drawn off and sent over the land to be irrigated. The sludge is then discharged into a tank, from which it is allowed to run into a vessel as required, and then forced from this vessel by compressed air into a press. After being under pressure a short time, the cakes of sludge are removed, and are available for disposal as manure. In many places, we understand, this commands a ready sale.—*Wiltshire Times.*

*Leeds.*—A special committee of the Leeds Town Council, which was appointed to consider the desirability of providing a permanent art gallery for the borough, has presented a report recommending that 8,000*l.* should be granted for that purpose. The Council have adopted the recommendation,—as a beginning, we presume.——At the last meeting of the Council, a deputation attended to impress upon the Council the necessity of allowing the old Cattle Market in North-street to be kept as an open space for the benefit of that largely populated district. It was pointed out in a petition, signed by Mr. Barran, M.P., Mr. W. L. Jackson, M.P., and a number of property-owners and ratepayers, that the original cost of the site was only 5,800*l.* When the matter came up for discussion by the Council, Alderman Scarr moved,—"That the site of the old Cattle Market in North-street be appropriated to the purpose of a public recreation-ground." The motion was carried.

*Leicester.*—Last week Major Tulloch, R.E., one of the Local Government Board's Inspectors, held an inquiry at the Town-hall, Leicester, into an application on the part of the Town Council to borrow 70,000*l.* for the purpose of laying a system of new trunk sewers in the borough. The Town Clerk said that this was an application by the Corporation to the Local Government Board for their sanction to a loan of 70,000*l.* for the execution of main sewers in the borough, but practically the work was part of a scheme which would also include extensive works outside the borough,—namely, two storm-water culverts or free outlets in times of flood, down to Thurmaston. Mr. J. Gordon, the Borough Surveyor, said that formal instructions with regard to the work were given to him by the Highway and Sewerage Committee early in the present year. He had, however, been considering the scheme for some time, and had it in such a forward state that he was in a position to lay a plan before the committee a week later. He then fully stated his reasons for recommending his scheme. The scheme was considered in committee and by the Council. He satisfied them that it was necessary something should be done with the sewers, and thought it best to adopt an entirely new scheme of trunk sewers, adhering, however, to the lines of the present sewers as far as practicable. Mr. Gordon explained his reasons for departing from the lines of the present system, and gave details of what was proposed to be done by the adoption of his new system. He proposed that the pumping station should be shifted from its

present point lower down to a straight line with Beaumont Leys, and there was a departure from the original scheme with regard to the levels in order to get a free outfall. Whilst the present pumping engines were only capable, with a very great strain, of lifting about 13,000,000 gallons of sewage,—and in reality immediately they got 11,000,000 gallons with a rainfall the present outfalls came into operation,—with the new pumping station and four engines they would have driving at the ordinary speed, they would be able to lift 19,000,000 gallons, and the storm-water outfall at Thurmaston would be much less often in operation than the present outfall. They would pump away a much larger quantity, and of course the more they pumped away the less would go into the river. The principle throughout the whole scheme was that the main outfall sewer was capable of discharging two inches of rainfall from the present area in twenty-four hours. But supposing that the whole area of the present borough, namely, 3,030 acres, were built upon, he calculated that the trunk sewers he intended to lay down would be capable of carrying off the whole of the sewage of the area, and, in addition, discharge by means of the storm outfalls a quarter of an inch of rainfall per hour. Therefore he considered that they had made ample provision for the future growth of the town.

*Sittingbourne.*—At a meeting of the Sittingbourne Local Board last week a letter was received from the Local Government Board with reference to a recent inquiry conducted by Major-General Carey, R.E., into the proposal to borrow 2,500*l.* for street improvements, with the result that the Board entirely approved of the schemes, except two small items, and sanctioned the borrowing of the money.

*Yarmouth.*—We regret to hear that recently the west and north fronts of the Town-hall of Great Yarmouth, which has only been built a few years, have shown serious signs of settlement. It is stated that near the north-west corner there are some very serious cracks, extending from the parapet almost to the base of the building. Workmen have been engaged in placing shores against the north wall; and a committee of the Corporation has had a special conference on the matter with Sir Joseph Bazalgette, who was summoned from London for the purpose.

## The Student's Column.

### STONE QUARRIES.—VII.

DEVON AND CORNWALL GRANITES (*continued*).

3. *Luxullian District.*

THE granite in this mass is far more variable in composition and contains much more schorl than either of the other districts described. Sir H. de la Beche, however, says that the granite in the eastern part somewhat resembles that obtained from them, the mineral composition being about the same. Mica is scarce or altogether absent on the west side of the mass, being replaced by a steatitic or talcose mineral and schorl. Dr. Boase says that, although schorl is rare in parts, it is never quite absent, and veins of that mineral are abundant, especially in the western and central portions.

In some parts of the district immense boulders strew the surface of the ground, and rest upon one another in the most picturesque positions. The late Duke of Wellington's sarcophagus was made of one of these, the stone being called Luxullianite, and composed of schorl, flesh-coloured orthoclase, and quartz. It has never been met with *in situ*.

The Cornwall Minerals Railway from Par Station to New Quay runs through this district and gives great facilities for the development of the quarries. The principal of these is the

*Colcerrow Quarry*, which is not far from St. Austell.

The principal characteristics of the stone are the enormous size of the masses in which it is found, and the great regularity of the beds, which, contrary to the usual lie of the rock, are very nearly horizontal. The masses of stone are rarely less than 1,000 tons, and frequently 3,000 to 4,000 tons in their cubic quantity.

It is distinctly a coarse-grained granite, and the structure of the stone renders it singularly appropriate for polishing where monolith or moulded work is required. The felspar is of two colours, white and light green, the latter being far less abundant than the former. The white felspar is very irregular in appearance; large patches of it are seen here and there, but the peculiar manner in which it fills up little cracks, and envelopes and isolates the other crystals, especially the quartz, is very marked. The latter mineral occurs in rounded grains, and in some places has a tendency to become ovoid, several little grains being joined together, making rough lines of quartz running short distances. Both black and white micas are present, the former being the more abundant. Schorl is also found in minute quantities.

This granite has been used in the construction of the Plymouth breakwater and lighthouse and in docks in the south of England and at Pembroke, &c.

*Tregarden Quarry* and others of less magnitude are close to Colcerrow, the whole being connected with Par harbour, whence the stone is shipped by the Cornwall Minerals Railway, and they lie not more than three miles from the sea.

Within a short distance of Luxullian, near St. Austell, is *Carn Grey*, a hill of very fine-grained granite, extremely hard, but of jointy structure. This is connected with the previously-mentioned quarries, and has been principally used for pitching and kerb.

4. *Penryn District.*

The granite of this district is more largely quarried than any other in Devon or Cornwall. The rock found here, in some places, is more like that of the Dartmoor and St. Breward districts, in mineralogical constitution, than that of the Luxullian, schorl not being abundant, whilst large felspar crystals render the stone porphyritic. These, however, are occasionally absent. Schorl sometimes occurs in veins, on the confines of the mass. There is a great uniformity in the grain of the granite in this district. With the exception of the Carnsew quarries and a few isolated and unimportant patches, it is a medium between coarse and fine grain. It is comparatively easily quarried, lies in large masses, though not so large as those in the Luxullian district, and the workings are carried on all the year round as the climate is favourable. The quarries lie from a mile and a half to five miles distant from the port of shipment, and are mostly worked at piece-work by gangs of men whose knowledge of the nature of the rock and skill in its manipulation are remarkable.

In 1833 Mr. Enys stated that the vertical divisional planes or joints of the granites near Penryn took a north north-west to south south-east direction, varying but a few degrees from these points.*

*Carnsew Quarries.*—These quarries, which are situated a little over a mile from the shipping quay at Penryn, have been very largely developed.

The fineness of the grain, combined with the large size of the masses raised, gives them great advantage over the other quarries: consequently the rock is employed for the more important parts of engineering works, and also largely for monumental purposes.

The colour of the stone is bluish-grey. It more closely resembles the De Lank granite, already described, than any other Cornish granite we have seen. It is even in texture, and is not porphyritic. The felspar is white, the crystalline boundaries not being at all well defined. Both black and white micas occur, the former being more abundant than the latter. Quartz is tolerably plentiful in small grains.

A very large portion of the arch-stones of Putney Bridge was supplied from these quarries.

*Penryn Quarries.* — The colour of this stone is grey, and differs from the Carnsew in being much coarser. The orthoclase felspar is white, some of it being irregular, but well-defined twinned crystals, about 1 in. in length, are seen close together, making the stone porphyritic. White and black micas are both present, the former being much more abundant than in the Carnsew; large silvery white flakes occur. The black mica is occasionally congregated together in small patches. Clear quartz is present in little grains, the average size being about 4 or 5 mm.

* "On Granite near Penryn," *Lond. and Edin. Phil. Mag.*, May, 1833.

5. *Penzance District.*

Generally speaking, the granite of this district has a considerable amount of schorl in addition to the three essential minerals. It is often porphyritic. The outskirts of the mass to the west of Penzance contain good examples of schorlaceous granite and schorl rock (schorl and quartz). Near Trevalgan, St. Ives, large felspar crystals are present with schorl and quartz, the mica being absent. At Tregender, near Ludgvan, the granite is composed of all four minerals, mica being especially abundant.

*Lamorna Quarries.* — These are situated on the north-east side of Lamorna Cove, about five miles from Penzance Harbour. At present, however, the great difficulty in loading vessels with the stone prevents its more extensive use. Such is the nature of the coast round Lamorna Cove that ships have had to put out to sea two or three times whilst loading, or run the risk of being wrecked. This, of course, adds considerably to the expense of the material.

The general colour of the rock is light greenish-grey. Felspars are light-green and white, those helping to form the base being scattered about irregularly. The dirty white felspars which cause the stone to become porphyritic are unusually large, some being 2½ in. to 3 in. in length. Both black and brown micas occur as very small flakes, and large black crystals of schorl are exceedingly plentiful. The transparent quartz is in little grains, being fairly distributed, but not too abundant.

We are informed that there is hardly any covering of earth on the granite at Lamorna, and that in many places its bare top is to be seen.

*Sheffield Quarry.*—This quarry takes its name from the village of Sheffield close by. It is about two miles and a half from the western-most point of Penzance.

The boss of granite whereon this quarry is situated is rather peculiar. When it was first opened a point of granite was exposed above the surface, and working from that central point, the declination of the surface of the rock was about the same on all sides. The crust of ordinary earth varied in depth from 2 ft. to 8 ft., under which the granite appeared to be kaolinised for about 1 ft. before the ordinary granite was reached.

The stone has a rather fine base composed of small crystals of light green felspar, which occurs in little granules; dirty white felspar exists in small pieces enclosing minute grains of quartz. Like Lamorna, the large white orthoclase felspars, which make the stone porphyritic, are very large, being frequently twinned on the Carlsbad type. Sometimes these large felspars are crystallised in a peculiar manner, presenting the appearance of a cross with boundaries well defined. Moreover, the large crystals generally, in this quarry, do not occur with the longer axes approximately in one direction, consequently it is often difficult to split the rock up. Although this renders the quarrying of the stone somewhat troublesome, it is an advantage rather than otherwise, as far as the strength of the material is concerned. The crystals interlock with one another, and the stone has therefore no tendency to cleave along the planes which coincide with the clinopinakoids.* Black mica occurs in small quantities, whilst although the quartz is not over-abundant, here and there it is, for Cornish granite, in rather large crystals. Small pieces of black schorl are common.

The stone is principally used for dock-work, in blocks varying from one to ten tons, and also for dressed fronts of buildings, rough walling, pavings, and kerbings. It is carried by wagons for shipment to various ports, both at home and abroad. At present the material is being supplied for Her Majesty's dock at Malta.

*New Mill or Cranken Quarry.*—This quarry is situated about four miles north of Penzance.

About 8 ft. of earth crust and 6 in. of kaolinised granite were dug out before solid stone was reached. It is different in appearance from either Lamorna or Sheffield, the prevailing felspar being of a light yellow colour, and rarely light green. The porphyritic crystals are not so well defined, and the felspar and quartz are more equally divided. In places this granite contains little patches of dark matter, having a very fine microscopic base, in which black needle-like crystals are distinctly

* The planes of composition.

prominent, whilst the large orthoclase spars that occur in the base are usually much clearer and with more definite boundaries than in the other parts of the rock. Little schorl crystals are very abundant at the expense of the mica, which is black, and more rarely dark brown. The quartz occurs in small granules, making the rock look compact. Very large blocks have been raised.

The two quarries, Sheffield and New Mill, now represent nearly the whole working of granite near Penzance.

*** *Kithill Quarries.*—The agent for these and the Tamar quarries, which are in the hands of the same company, writes to us to disclaim having issued any circulars "giving an account of prospective work," alluding to a phrase used in a previous article.

## RECENT PATENTS.

### ABSTRACTS OF SPECIFICATIONS.

11,141, Improvements in Chimney-tops. J. Dickson.

These chimney-tops are made with arms or branches issuing from or connected with the trunk or shaft of the chimney converging upwards in such a manner that the upper outlets for the smoke may be near to each other, and in parallel vertical planes. To effect this, the arms diverge so that the appearance at the top is like a triangular arrangement of pipes, the lower ends being open, and the upper or top orifices placed vertically opposite and near each other. The advantage claimed is that the wind cannot force the smoke downwards.

9,935, Lavatory Basin. P. Winn.

Some of the improvements covered by this patent are specially applicable to fixed basins, while others are intended for those basins which are turned up for the purpose of emptying them. The basins are formed in the figure of an ellipse, but one of the longer sides is flatter, or of a longer radius,—like a dish,—the flat side being turned towards the user. In this form the user of the basin has more room at the sides under his elbows than in basins of the ordinary kind, and the area of the basin is not increased. The supply cocks are placed out of the way of the user's hands when washing, and are fitted with nozzles so arranged as to flush the water over the basin for the purpose of cleansing it. For turn-up basins coned fittings, which may be screwed up to a great nicety, are provided.

12,156, Ventilators. J. Bedford.

Roof ventilators, the subject of this patent, are fixed by a square shoulder formed at the lower part of the cylindrical shaft. For fixing, a square space is trimmed and fitted with a metal framework to receive the base of the ventilator, which is fastened by nails or screws. Two of the sides of the square base are cut off at an angle to correspond with the internal slope of the roof. At the bottom of the wood or metal lining of the square space, and round the edge is fixed a wooden or metallic beading or moulding, which serves partly as a ledge or support for the bottom edge of the base of the ventilator to rest upon, and also as a boundary or finish for the plastering to be carried up to. At the required position upon the outside of the shaft of the ventilator a flashing or border of sheet-lead is soldered in order that the flashing may be turned down to the required position without the use of fire or soldering tools upon the roof.

10,416, Improvements in Water-closets. John Shanks.

This invention is chiefly applicable to closets fitted with Bramah discharge valves. One or two discharge valves are provided; in the latter case a water seal is effected. An overflow passage made with a trap bend is formed in the material of the basin, or between the basin and the inside of the casing. A hole is formed in the top of this overflow passage for the purpose of allowing it to be cleaned. The inlet is attached to a pocket or jacketed space or hollow rim made either in the basin or between the basin and casing, or in the casing itself, the water first filling either of these spaces, and when the handle is let go, the water for the after-service to partly fill the basin, flows from either of these spaces through small holes made for the purpose. small hole from the rim or pocket into the overflow passage allows water to pass into the trap bend of this passage for the purpose of always keeping it clean and full every time the closet is used.

### NEW APPLICATIONS FOR PATENTS.

*July* 30.—9,824, A. Muir, Mitreing Boards, Mouldings, Architraves, &c.—9,829, J. Tucker, Window Fastener.—9,840, G. Harrison, Fireproof Paint, &c.

*July* 31.—9,859, H. Dean, Intercepting Gullies and Grease Traps.—9,860, H. Dean, Drain and Ventilating Traps.—9,881, H. Johnson and T. Bessant, Fastener for Windows, Doors, &c.—9,895, G. Rayner, Retaining Catches for Doors.—9,896, T. Smith, Nails.—9,900, J. Alexander, Cistern Ball-Valves.

*August* 3.—9,935, J. Annandale, Fire-grates, Kitchen-ranges, and Stoves.—9,948, F. H. and L. Lecellier, Coupling for Pipes.

*August* 4.—9,976, J. Goodwin, Sustaining Sliding Doors and Windows.—9,987, T. Whitaker, Pile-driving Machines.—10,004, F. Reeves and A. Slatter, Indicating Apparatus for Hotels, &c.—10,012, H. Lake, Machinery for Decorative or Ornamental Woodwork.

*August* 5.—10,040, E. Goddard, Window Frames, Casements, Sash-bars, &c.—10,055, A. Andrews, Window-fasteners.—10,056, E. Wright, Springless Lock.

### PROVISIONAL SPECIFICATIONS ACCEPTED.

7,882, C. Coutts, Corrugated Water Supply Pipes.—8,173, E. Wilson, Screw Fasteners for Windows.—6,141, P. Barker, Water-closets.—8,152, H. Keene, Lead Glazing.—8,876, H. Hennes, Self-acting Fastenings for Doors and Windows.—8,889, W. Dryden, Fastenings for Window Sashes.—9,542, H. Cunningham, Wood Screw Machinery.

### COMPLETE SPECIFICATIONS ACCEPTED.

***Open to opposition for two months.***

9,881, F. Shorten, Stucco.—10,863, R. Dates, Water-waste Preventer Cistern for Water-closets.—11,680, F. Gowing, Sanitary Traps and Pipe Connexions.—11,759, O. Imray, Water Meters.—11,790, J. Lewthwaite, Paving Blocks.—12,405, J. Allen, Bricks and Tiles.—12,801, S. Bamford, Stench Traps.—13,741, D. Baker, Ventilating Flues.—11,146, C. Wharton, Automatic Window-sash Fastener.—11,159, W. Scott, Paperhangings.—11,833, W. Scott-Moncrieffe, Syphon Cisterns for Flushing Water-closets.—12,704, H. Marle, Set Squares.—8,818, M. Rothschild, Mortising Machines.

## RECENT SALES OF PROPERTY.

### ESTATE EXCHANGE REPORT.

AUGUST 3.

By DEBENHAM, TEWSON, & Co.

| | |
|---|---|
| Southend, Cliff Parade—Oakleigh House, freehold | £1,900 |
| Essex, Stebbing—Gentleman's Farm, containing 130a. 2r. 23p., freehold | 1,300 |

By W. T. HUNT, jun.

| | |
|---|---|
| Strand—14, White Horse-yard, freehold | 510 |

AUGUST 4.

By R. TYSER & Co.

| | |
|---|---|
| Barking, Bifron's-place—Twenty freehold cottages | 1,600 |
| Gunnersbury—41, Arlington Park Gardens, 91 years, ground-rent 9*l.* 9s. | 510 |

By Messrs. GRANT.

| | |
|---|---|
| Richmond—2 to 6, Rosedale-cottages, freehold | 750 |

By DANIEL SMITH, SON, & OAKLEY.

| | |
|---|---|
| Wandsworth Common—The residence "Bruntwood," and 16¼ acres, freehold | 17,500 |
| Putney—Ashbourne House, and 3a. 0r. 27p., freehold | 7,000 |

AUGUST 5.

By W. A. BLAKEMORE.

| | |
|---|---|
| Holloway—11, 12, and 15, Ashburton-grove, 53 years, ground-rent 11*l.* 12s. 6d. | 620 |

By NEWBON & HARDING.

| | |
|---|---|
| Holloway—13 and 15, Victoria-road, 47 years, ground-rent 10*l.*, with reversion to three houses | 650 |
| No. 43, St. John's-villas, freehold | 580 |
| Islington—340, Liverpool-road, 49 years, ground-rent 6*l.* | 600 |
| Stratford—41, 43, and 48, Weston-street, freehold | 760 |
| Forest Gate—24, Leyton-road, freehold | 400 |
| Finsbury Park—23, Plimsoll-road, 81 years, ground-rent 4*l.* 5s. | 340 |

AUGUST 6.

By GEORGE NEWMAN.

| | |
|---|---|
| Camberwell, Chatham-street—The Grosvenor Mineral Water Works, freehold | 1,370 |

By MARSH, MILNER, & LANGTON.

| | |
|---|---|
| Nunhead—Ground-rent of 7*l.*, reversion in 63 years | 210 |
| Peckham—Ground-rents of 9*l.*, reversion in 63 years | 330 |
| Camberwell—Ground-rent of 14*l.* 14s., reversion in 3 years | 2,330 |
| Ground-rents of 32*l.*, reversion in 37 years | 850 |
| Peckham—Ground-rents of 15*l.* 13s. 6d., reversion in 59 years | 460 |
| Canning Town—Ground-rents of 24*l.*, reversion in 63 years | 645 |
| Rotherhithe—Ground-rents of 5*l.* 5s., reversion in 16 years | 220 |

By E. ROBINS & HINE.

| | |
|---|---|
| Stroud Green—Freehold land, about 2¼ acres | 7,250 |
| Regent's Park—14, Albert-street, freehold | 1,050 |
| Peckham, Paddington-road—A plot of freehold land | 50 |

By G. B. SMALLFIELD.

| | |
|---|---|
| Cranleigh—Hilliard's Farm, 51a. 3r. 16p., freehold | 2,100 |
| The Park, containing 16a. 3r. 12p., freehold | 1,000 |
| Elliot's, comprising 18a. 2r. 38p., freehold | 650 |
| Steadmans, containing 6a. 3r. 11p., freehold | 370 |

**Architectural Association Saturday Visits.**—The Architectural Association, on Saturday last, visited the Royal Holloway College at Egham. The party were met by Mr. Walter Ledger, on behalf of Mr. W. H. Crowland, the architect, and Messrs. Thompson, sons of the contractor. The buildings have so recently been fully described and illustrated that it is unnecessary to describe them, but a very enjoyable and instructive visit was made. The next visit will be made on Saturday, the 21st inst., to Oxford.

## Miscellanea.

**The Proposed Jubilee Exhibition in Manchester.**—A meeting of the guarantors of the Manchester Jubilee Exhibition was held in the Mayor's Parlour, on the 5th inst., to receive the report of the committee appointed to inquire into the advisability of holding an exhibition and to elect an executive council to carry out the undertaking. The Mayor (Alderman Goldschmidt) presided. The Town Clerk (Sir Joseph Heron) stated that the guarantee fund now amounted to 105,000*l.* The Mayor having made a few remarks, called for the report of the Provisional Committee appointed to carry out the enterprise, providing that the necessary amount (100,000*l.*) was guaranteed. Sir Joseph Heron read the report, which stated that the Executive Committee had considered the question of the site. The scheme approved by the town's meeting, held on the 19th July last, stated that "the best position available for the Exhibition would appear to be land in the neighbourhood of Old Trafford, where several lines of railway converge, which would afford ample means of transport and communication." Accordingly the committee had visited the neighbourhood of Old Trafford, and were of opinion that the site lying between Talbot-road and the Botanical Gardens, containing about 6 acres, together with the Gardens themselves, containing about 16 acres, would form a suitable site for the proposed Exhibition (total, 22 acres). Sir Humphrey F. de Trafford, who was himself a guarantor to the fund to the extent of 1,000*l.*, had very handsomely placed the above plot at the disposal of the committee, free of charge, subject to arrangements being made with the tenants. The necessity for immediate action was such that the Provisional Committee decided to take active measures in relation to the designs for the exhibition building, and for this purpose they determined to appoint Mr. James Murgatroyd, architect, Manchester, as their assessor, and they instructed him to forward particulars to the following four architects, selected by the committee after careful consideration and much discussion:—Messrs. Maxwell & Tuke, Messrs. Pennington & Bridgen, Messrs. Salomons & Ely, and Messrs. Darbyshire & Smith. The designs, when furnished by the architects, would be submitted to the Guarantors' Council. Sir Joseph Lee moved the adoption of the report, and reviewed the proceedings of the committee since the town's meeting. He said that it was proposed, if possible, to raise the guarantee fund to 200,000*l.*, and there seemed to be very little doubt that that sum would be raised. The report was adopted.

**New Drainage Works of the Houses of Parliament.**—These works, and the ventilating works connected therewith, on the Shone hydro-pneumatic system, as recommended by the late committee of the House of Commons, have just been commenced, and will be carried forward with all possible speed. The engineer for the works is Mr. Isaac Shone, C.E., and the Resident Engineer is Mr. John Phillips, C.E. The Commissioners of her Majesty's Works and Public Buildings have let the works in three contracts, viz.,—for the general works, to Messrs. John Mowlem & Co., of Westminster; for the pneumatic and hydraulic ejectors, to Messrs. Hughes & Lancaster, of Chester and Liverpool; and the gas-engine air-compressors, to the British Gas Engineering Company, London. The total amount of the three contracts is under 10,000*l.*

**Glasgow Architectural Association.**—On Saturday afternoon a party of the members visited Kilwinning Abbey, and when assembled there, after a short description had been read by Mr. W. J. Anderson, engaged for a couple of hours in sketching and measuring the old remains. Passing on to Kilbirnie, the company had tea previously to visiting the interesting old church there, with its quaint woodwork in roof and gallery fronts and canopies. Here suitable subjects for sketching were found and taken advantage of till darkness set in.

**Local Board Surveyorships.**—Mr. Charles Cobham, of Sunderland, has been appointed Surveyor to the Local Board of Grays Thurrock, Essex, which met for the first time only a few weeks ago.

**Sales of Building Land.**—The Pheasantfield Freehold Building Estate was sold by Mr. R. J. Collier, at the Mart, on the 11th inst., for 16,000*l.* It comprises about sixteen acres.

**The "James Watt" Dock at Greenock.** This dock, which has been constructed on the old Garvel Park Estate at the east end of Greenock, was formally opened on the 5th inst. The first sod of the dock was cut on the 1st of August, 1878, and the foundation stone was laid on August 6th, 1881. Its construction has thus occupied eight years. The works comprise two tidal harbours, one wet dock, and one graving dock, with an extensive quayage area. The dimensions of these various docks are as follow:—James Watt wet dock,—width of entrance, 75 ft.; depth of water on cill at high water, 32 ft.; length, 2,000 ft.; width, 300 ft. to 350 ft.; length of jetty, 800 ft.; length of quays, 3,600 ft. Great harbour (tidal):—Length, 3,230 ft.; width, 600 ft.; area, 45 acres; depth at high water when completed, 38 ft. Garvel basin (tidal):—Width of entrance, 175 ft.; depth at high-water when completed, 35 ft.; length of quays, 2,480 ft. Garvel graving dock:—Length, 635 ft.; width, 80 ft.; width of entrance, 60 ft.; and depth on cill at high water, 20 ft. The total water space provided by those docks and tidal harbours is ninety acres; the total quay area about 100 acres; and the total length of quays is over three miles. The James Watt Dock, which is considered the greatest and most costly of these extensive harbours, is one of the finest harbourages for steamers of the largest class in the United Kingdom. It has cost over 250,000*l.*, and the outlay on the entire scheme, which has been designed by Mr. Kinipple, C.E., is fully half a million of money. An extensive range of warehouses and sheds, capable of storing 20,000 tons of general merchandise, has been constructed at a cost of about 40,000*l.* Lines of railways (Caledonian and Glasgow and South-Western) run along the sides of the Watt Dock, and lines of railways have also been laid through the centre of the warehouses and sheds; and hydraulic cranes of great power commanding those rails have been erected, so that goods can be loaded into or discharged from railway wagons under cover. On the jetty at the Watt Dock two 30-ton steam coaling cranes have been provided, each crane being capable of loading about 150 tons of coal per hour. According to the *Scotsman*, the James Watt Wet Dock has this enormous and almost essential advantage, that it is the only dock on the Clyde in which vessels of huge tonnage can be constantly kept afloat. At all other docks or harbours the large class of steamers ground during a part of each tide.

**Institution of Mechanical Engineers.**—The summer meeting of this institution will be held in London on Tuesday and Wednesday next, August 17th and 18th, at 25, Great George-street, Westminster, by kind permission of the Council of the Institution of Civil Engineers. The chair will be taken by the President, Mr. Jeremiah Head, at ten o'clock on Tuesday morning, and at half-past nine o'clock on Wednesday morning. The following papers have been offered for reading and discussion (not necessarily in the order here given), after the address by the President:—"Experiments on the Steam-Jacketing and Compounding of Locomotives in Russia," by M. Alexander Borodin, of Kieff; "On the Working of Compound Locomotives in India," by Mr. Charles Sandiford, of Lahore; "Description of a Portable Hydraulic Drilling Machine," by M. Marc Berrier-Fontaine, of Toulon; "Description of the Blackpool Electric Tramway," by Mr. M. Holroyd Smith, of Halifax; and "On Triple-Expansion Marine Engines," by Mr. Robert Wyllie, of Hartlepool.

**The Proposed New Public Park, Dundee.**—A meeting of the Police Commission was held on the 9th inst., Bailie Gentle presiding, when, on the motion of the chairman, it was resolved to extend the Magdalen Green by acquiring the property already conditionally agreed to be purchased from Mr. Scott, of Balgay, and such Crown rights as might be necessary, and by extending the esplanade westwards to a line in continuation of Windsor-street. The extension will add about sixteen acres to the area of the Magdalen Green, the estimated cost of forming the embankment, making the roadway, and erecting a bridge over the railway being about 15,000*l.* A contribution towards the cost of the undertaking is expected from the Caledonian Railway Company. At the same meeting it was resolved to expend 300*l.* in extending the stables of the Commissioners in Allan-street.

**Engineers' Visit to Scotland.**—On the 30th ult., a party of members of the Liverpool Engineering Society visited the Forth and Tay Bridges, at the invitation of the engineers and contractors of the respective undertakings. On arrival at Queen's Ferry South, the party was met by Mr. Cooper, the resident engineer of the Forth Bridge, who drew attention to the novel features of the special appliances for erecting this gigantic structure. Having examined the various details connected with the south shore end of the work, the party embarked in the steam-launch kindly placed at their disposal for the occasion, and proceeded to the north shore. Here the "skew backs" which are now in position were examined with much interest. The mode of erecting the vertical members of the piers, and the skilful arrangement for raising temporary staging by hydraulic pressure, were explained by Mr. Cooper. The party were much struck with the progress made in all parts of the work since their visit last year, the whole of the foundation being now completed. The precautions taken against accident were also noted with satisfaction, riveters and others engaged on the elevated part of the work exposed to heavy winds, &c., being protected by a wire caging, which also prevents tools and materials falling on the men below. The facility with which the riveting *in situ* is effected by means of the specially-designed apparatus was thoroughly appreciated. A visit was paid to the Exhibition by the party on their return to Edinburgh. Proceeding to Dundee the party made an inspection of the Tay Bridge on the 2nd inst., under the guidance of Mr. Seabright, one of the assistant engineers. Here, again, a steam launch conveyed members to the various points of interest. One of the large bowstring girders in course of construction was seen, and the method of floating it into position in mid-stream was explained. The opportunity afforded of comparing the design and execution of the old and new bridges was by no means the least instructive feature of the excursion.

**Action by an Architect.**—An action was brought by Mr. Joseph Crouch, architect, Birmingham, against Messrs. D. S. Beasley & Co., engineers, Bracebridge Works, Bracebridge-street, to recover 37*l.* for professional services rendered. Mr. Lindsell (instructed by Mr. Pepper, Birmingham) appeared for the plaintiff, and Mr. Vachell (instructed by Mr. Turner, Birmingham) for the defendants. Plaintiff said he first prepared plans for the defendants for the repair of some buildings in Dartmouth-street, for which he charged 3*l.* 3*s.* In January, 1885, he prepared plans and drew out specifications for some buildings in Bracebridge-street. The cost of these buildings was about 1,500*l.*, and his commission was at the rate of 2½ per cent. The usual architect's commission was at the rate of 5 per cent. He did some work which did not properly come under the head of an architect's duties, but he made no extra charge. They experienced some difficulty with the foundation, which led to the laying down of a large bed of concrete. The building was completed in July, 1885. He sent in his account shortly afterwards, but defendants refused to pay it. The defence was that all the buildings were not erected, and defendant declined to pay except on those put up. The jury in the end found for the full amount claimed, and his Lordship certified for costs on the higher scale. *Birmingham Gazette.*

**Pauper Lunatic Asylum, Plymouth.**—The *Western Morning News* of the 10th inst. gives an account of the result of the competition for the Pauper Lunatic Asylum at Plymouth, for which architects of Plymouth and for a radius of twenty miles round, were invited to compete. Mr. Howell, F.R.I.B.A., was invited to assist the committee in adjudicating on the plans, and reported in favour of "Tamar," by Mr. L. J. Hodge, of Plymouth, for the first premium, the cost of the design being estimated at 35,000*l.* The design signed "Pauperis semper habetis," by Mr. Charles King, of Plymouth, was placed second, the estimate of cost being 39,000*l.* The third place was given to the plans signed "Consideration," by Messrs. Hine & Odgers, of Plymouth, who estimated that their plans could be carried out for 25,900*l.*, or about 10,000*l.* less than Mr. Hodge's, and nearly 14,000*l.* below the estimate of Mr. King. The committee decided to adopt the plans of Messrs. Hine & Odgers.

**Holy Trinity Church, Guildford.**—A meeting has lately been held to consider the question whether Holy Trinity Church, Guildford, should be enlarged, or whether a new church or chapel-of-ease should be built on another site. The Rector (the Rev. A. S. Valpy) said that, as to the question of rebuilding the church on the old site, his lamented predecessor consulted the eminent architects, Messrs. Carpenter & Ingelow, on the subject. The great initial disadvantage of that scheme was that they had a cramped site, which would never show off the church to advantage, besides which it would keep the existing worshippers out of the church for a long period. Mr. A. W. Blomfield, whom he had consulted, was of opinion that it would be a great mistake to pull it down, as it was substantially built, and the enlargement would make as good a church as any new one. He (the Rector) had sent the plans to the Bishop. Mr. Blomfield's proposal was to extend the church at the east end, with an apse at the extremity of the present boundary, to take down the existing tower, put it out to the northern boundary, utilise the space where the tower and porches are, make the vestibule where the present steps are, and retain the main north and south walls and the vestry, using the latter as a baptistery. The saving by this scheme would be between 4,000*l.* and 5,000*l.*, which was a matter of some consideration. The estimate for this enlargement was 6,800*l.*, and the increased accommodation would be for 700 on the ground-floor besides the gallery, and with the extra seats in the aisles they would have the means of seating nearly 1,000 people, or 300 or 400 more than at present. After some discussion, in the course of which a letter was read from the Bishop of Winchester, expressing his approval of Mr. Blomfield's plans, the following resolution was unanimously adopted:—"That this meeting approves the plans and proposals of Mr. Blomfield for enlarging Holy Trinity Church, and suggests that such be carried out as soon as funds will permit; and that an appeal for that purpose be drawn up and issued."

**Electric Lighting.**—The Admiralty seem to be going in extensively for electric lighting. They have just given an order to a well-known Electric Manufacturing Company for over 7,000 switches, besides fusible plugs, brackets, and other articles.

## PRICES CURRENT OF MATERIALS.

| TIMBER. | £. | s. | d. | £. | s. | d. |
|---|---|---|---|---|---|---|
| Greenheart, B.G. ....ton | 6 | 5 | 0 | 7 | 0 | 0 |
| Teak, E.I. ....load | 9 | 0 | 0 | 14 | 0 | 0 |
| Sequoia, U.S....foot cube | 0 | 2 | 4 | 0 | 2 | 7 |
| Ash, Canada ....load | 3 | 0 | 0 | 4 | 10 | 0 |
| Birch „ .... | 2 | 10 | 0 | 4 | 0 | 0 |
| Elm „ .... | 3 | 10 | 0 | 4 | 10 | 0 |
| Fir, Dantsic, &c. .... .... | 1 | 10 | 0 | 4 | 0 | 0 |
| Oak „ .... | 2 | 10 | 0 | 4 | 10 | 0 |
| Canada .... | 3 | 0 | 0 | 6 | 0 | 0 |
| Pine, Canada red .... | 2 | 0 | 0 | 3 | 10 | 0 |
| „ yellow .... | 2 | 5 | 0 | 4 | 0 | 0 |
| Lath, Dantsic ....fathom | 3 | 0 | 0 | 5 | 0 | 0 |
| St. Petersburg .... | 4 | 0 | 0 | 5 | 10 | 0 |
| Wainscot, Riga....log | 2 | 15 | 0 | 4 | 0 | 0 |
| „ Odessa, crown .... | 3 | 5 | 0 | 3 | 7 | 6 |
| Deals, Finland, 2nd and 1st...std. 100 | 7 | 0 | 0 | 8 | 0 | 0 |
| „ 4th and 3rd .... | 6 | 0 | 0 | 7 | 0 | 0 |
| Riga .... | 5 | 10 | 0 | 7 | 0 | 0 |
| St. Petersburg, 1st yellow .... | 8 | 0 | 0 | 14 | 0 | 0 |
| „ 2nd „ .... | 7 | 0 | 0 | 8 | 0 | 0 |
| „ white .... | 7 | 0 | 0 | 10 | 0 | 0 |
| Swedish .... | 6 | 0 | 0 | 15 | 0 | 0 |
| White Sea .... | 7 | 0 | 0 | 17 | 10 | 0 |
| Canada Pine, 1st .... | 17 | 0 | 0 | 30 | 0 | 0 |
| „ 2nd .... | 12 | 0 | 0 | 17 | 0 | 0 |
| „ 3rd, &c. .... | 6 | 0 | 0 | 10 | 0 | 0 |
| „ Spruce 1st .... | 8 | 0 | 0 | 11 | 0 | 0 |
| „ 3rd and 2nd .... | 5 | 0 | 0 | 7 | 10 | 0 |
| New Brunswick, &c.... | 5 | 0 | 0 | 7 | 0 | 0 |
| Battens, all kinds .... | 4 | 0 | 0 | 12 | 0 | 0 |
| Flooring Boards, sq. 1 in., Prepared, first .... | 0 | 9 | 0 | 0 | 13 | 0 |
| Second .... | 0 | 7 | 6 | 0 | 8 | 6 |
| Other qualities .... | 0 | 5 | 0 | 0 | 7 | 0 |
| Cedar, Cuba....foot | 0 | 0 | 2 | 0 | 0 | 3½ |
| Honduras, &c. .... | 0 | 0 | 2½ | 0 | 0 | 3½ |
| Australian .... | 0 | 0 | 2 | 0 | 0 | 3 |
| Mahogany, Cuba .... | 0 | 0 | 4 | 0 | 0 | 7 |
| St. Domingo, cargo average .... | 0 | 0 | 4 | 0 | 0 | 7 |
| Mexican „ .... | 0 | 0 | 3½ | 0 | 0 | 4½ |
| Tobasco „ .... | 0 | 0 | 4 | 0 | 0 | 6½ |
| Honduras „ .... | 0 | 0 | 4½ | 0 | 0 | 6½ |
| Maple, Bird's-eye .... | 0 | 0 | 6 | 0 | 0 | 8 |
| Rose, Rio ....ton | 7 | 0 | 0 | 10 | 0 | 0 |
| Bahia.... | 6 | 0 | 0 | 10 | 0 | 0 |
| Box, Turkey .... .... | 5 | 0 | 0 | 17 | 0 | 0 |
| Satin, St. Domingo ....foot | 0 | 0 | 7 | 0 | 0 | 11 |
| Porto Rico .... | 0 | 0 | 8 | 0 | 1 | 3 |
| Walnut, Italian .... | 0 | 0 | 4 | 0 | | 5 |

| METALS. | £. | s. | d. | £. | s. | d. |
|---|---|---|---|---|---|---|
| Iron—Pig, in Scotland ....ton | 0 | 0 | 0 | 0 | 0 | 0 |
| Bar, Welsh, in London.... | 4 | 7 | 6 | 4 | 15 | 0 |
| ,, in Wales .... | 4 | 2 | 6 | 4 | 7 | 6 |
| ,, Staffordshire, London .... | 5 | 10 | 0 | 6 | 0 | 0 |
| Sheets, single, in London.... | 6 | 15 | 0 | 8 | 15 | 0 |
| Hoops ,, .... | 6 | 0 | 0 | 7 | 0 | 0 |
| Nail-rods ,, .... | 5 | 10 | 0 | 6 | 10 | 0 |
| Copper— | | | | | | |
| British, cake and ingot ....ton | 42 | 0 | 0 | 42 | 10 | 0 |
| Best selected .... | 42 | 10 | 0 | 43 | 10 | 0 |
| Sheets, strong.... | 47 | 0 | 0 | 48 | 0 | 0 |
| ,, India .... | 44 | 10 | 0 | 45 | 10 | 0 |
| Australian .... | 0 | 0 | 0 | 0 | 0 | 0 |
| Chili, bars .... | 39 | 2 | 6 | 39 | 10 | 0 |
| Yellow Metal....lb. | 0 | 0 | 3½ | 0 | 0 | 4¼ |
| Lead—Pig, Spanish .... | 12 | 15 | 0 | 0 | 0 | 0 |
| English, common brands.... | 13 | 2 | 6 | 13 | 5 | 0 |
| Sheet, English .... | 14 | 10 | 0 | 0 | 0 | 0 |
| Spelter— | | | | | | |
| Silesian, special ....ton | 14 | 2 | 6 | 0 | 0 | 0 |
| Ordinary brands .... | 13 | 17 | 6 | 14 | 0 | 0 |
| Tin— | | | | | | |
| Banca ....ton | 0 | 0 | 0 | 0 | 0 | 0 |
| Billiton .... | 0 | 0 | 0 | 0 | 0 | 0 |

| METALS (*continued*). | £. | s. | d. | £. | s. | d. |
|---|---|---|---|---|---|---|
| Tin—Straits .... | 98 | 10 | 0 | 0 | 0 | 0 |
| Australian .... | 99 | 15 | 0 | 0 | 0 | 0 |
| English ingots.... | 102 | 0 | 0 | 0 | 0 | 0 |
| Zinc— | | | | | | |
| English sheet ....ton | 18 | 0 | 0 | 18 | 5 | 0 |
| **OILS.** | | | | | | |
| Linseed ....ton | 22 | 0 | 0 | 22 | 10 | 0 |
| Cocoanut, Cochin .... | 32 | 10 | 0 | 33 | 0 | 0 |
| Ceylon .... | 25 | 15 | 0 | 0 | 0 | 0 |
| Copra.... | 0 | 0 | 0 | 0 | 0 | 0 |
| Palm, Lagos .... | 23 | 0 | 0 | 23 | 10 | 0 |
| Palm-nut Kernel .... | 0 | 0 | 0 | 0 | 0 | 0 |
| Rapeseed, English pale.... | 22 | 0 | 0 | 0 | 0 | 0 |
| ,, brown .... | 20 | 5 | 0 | 0 | 0 | 0 |
| Cottonseed, refined .... | 18 | 10 | 0 | 19 | 0 | 0 |
| Tallow and Oleine .... | 35 | 0 | 0 | 45 | 0 | 0 |
| Lubricating, U.S. .... | 6 | 0 | 0 | 10 | 0 | 0 |
| ,, Refined .... | 8 | 0 | 0 | 13 | 0 | 0 |
| Turpentine— | | | | | | |
| American, in casks....cwt. | 1 | 5 | 6 | 0 | 0 | 0 |
| Tar—Stockholm ....barrel | 0 | 15 | 0 | 0 | 15 | 6 |
| Archangel.... | 0 | 10 | 6 | 0 | 11 | 0 |

## COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

*Epitome of Advertisements in this Number.*

### COMPETITIONS.

| Nature of Work. | By whom required. | Premium. | Designs to be delivered. | Page. |
|---|---|---|---|---|
| Additional Accommodation to Schools .... | Cannock School Board | Not stated .... | August 23rd | ii. |
| New Municipal Buildings .... | City of Edinburgh .... | 250*l.*, 150*l.*, and 100*l.* | Dec. 31st | ii. |

### CONTRACTS.

| Nature of Work, or Materials. | By whom required. | Architect, Surveyor, or Engineer. | Tenders to be delivered. | Page. |
|---|---|---|---|---|
| Street Improvements .... | Southend Local Board.. | F. H. Tulloch .... | August 17th | ii. |
| Tar Paving and Paving Bricks .... | Croydon Town Council | *Official* .... | August 19th | ii. |
| Cleansing River Blackwater .... | Farnham, &c., R.S.A.... | do. | do. | ii. |
| Pipe Sewers .... | Uxbridge R. S. A. .... | J. Anstie.... | August 20th | ii. |
| Laying and Jointing Pipes .... | Northwich Local Board | H. Bancroft .... | August 21st | xiii. |
| Oak Fencing .... | Mortlake Highway Brd. | J. Medworth.... | do. | xiii. |
| Sewerage Works .... | Exmouth Local Board | E. Cousins & Son.... | August 24th | ii. |
| Out-Buildings, &c., Lambeth Schools .... | Lambeth Guardians.... | Catt & Smith.... | August 25th | xiii. |
| Road-Making and Paving Works.... | Fulham Vestry.... | *Official* .... | do. | ii. |
| Adapting Chapel for Post-Office .... | Com. of H.M. Works... | do. | August 26th | ii. |
| New Church, Cockett, Swansea .... | Rev. D. Roderick .... | T. L. Lewis .... | do. | ii. |
| Rebuilding and Repairing Bridges .... | County of Brecknock... | *Official* .... | August 28th | ii. |
| Blue Guernsey Granite, Flints, &c.... .... | Kingston-upon-Thames Corporation .... | do. | August 30th | xiii. |
| Construction of Harbour, &c. .... | Cart Navigation Trus. | Miller & Bell.... | August 31st | ii. |
| Private Street Improvements .... | Walthamstow Lcl. Brd. | G. B. Jerram .... | Sept. 1st | ii. |
| Construction of Reservoir .... | Farnham Water Co. Lim | Pollard & Forder.... | Sept. 3rd | ii. |
| Blue Broken Guernsey Granite.... | Romford Local Board... | *Official* .... | Sept. 4th | xiii. |
| Paving, Sewering, and Making-up Road, &c. | Beckenham Local Brd. | G. B. Carlton .... | Sept. 6th | ii. |
| Taking down and Re-erecting Mortuary .... | Vestry of St. Leonard, Shoreditch .... | *Official* .... | do. | ii. |
| Wrought-Iron Bridge, &c.... | Condover Highway Brd. | J. W. Hoult.... | Sept. 9th | ii. |

### PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Applications to be in. | Page. |
|---|---|---|---|---|
| County Surveyorships in Ireland .... | Civil Service Com. .... | Not stated .... | Sept. 10th | i. |
| Assistant Surveyor.... | do. | do. | Sept. 21st | xvi. |

## TENDERS.

ACTON.—For construction of road and sewer, to be called Nemoure-road, Acton. Messrs. E. E. Croucher & Co., surveyors, Chancery-lane :—
Adams.... £400 0 0

BEDFORD.—For the erection of three villas on the Clapham-road, Bedford, for Mr. Thos. Fane. Mr. F. T. Mercer, architect, Bedford. Quantities by the architect :—
J. P. White (accepted) .... £2,419 0 0

BEDFORD.—For the erection of a shop and dwelling-house in Midland-road, Bedford, for Mr. A. Wellsley. Mr. F. T. Mercer, architect, Bedford. Quantities by the architect :—
G. Harrison (accepted) .... £600 0 0

BEDFORD.—For alterations and additions to premises, High-street, Bedford, for Mr. F. Gammon. Mr. F. T. Mercer, architect, Bedford. Quantities by the architect :—
J. Ball (accepted) .... £180 0 0

BEDFORD.—For the erection of two houses in Waldeck-avenue, Bedford, for Mr. H. D. Tebbutt and Mrs. F. H. Tebbutt. Mr. F. T. Mercer, architect, Bedford. Quantities by the architect :—
T. Laughton (accepted) .... £1,191 0 0

BEDFORD.—For the erection and completion of two dwelling-houses, in Victoria-road, Bedford, for Mr. T. W. Pearse. Mr. F. T. Mercer, architect, Bedford. Quantities by the architect :—
White (accepted) .... £800 0 0

BEDFORD.—For the erection of two villa-residences, on the Clapham-road, Bedford, for Mr. H. Duhan. Mr. F. T. Mercer, architect, Bedford. Quantities by the architect :—
T. Laughton (accepted).... £1,440 0 0

BEDFORD.—For alterations to premises in Mill-street, Bedford, for Mr. T. Hague Currier. Mr. F. T. Mercer, architect, Bedford. Quantities by the architect :—
F. H. Long (accepted) .... £295 0 0

BRENTWOOD.—For the erection of a villa on the Ongar-road, for Miss R. Smales. Mr. Arthur Woods, M.S.A., architect, Town Hall, Brentwood. Quantities by the architect :—
Winter Bros.... £890 0 0
Alderton.... 847 0 0
Corney & Perkins .... 781 10 0
Rogers (accepted) .... 719 0 0
[All of Brentwood.]

CAMBERWELL.—For the erection of warehouse, chimney-shaft, stables, and van-sheds, St. George's-road, for Mr. H. Nye. Mr. Henry Phillips, architect. No quantities :—
J. & J. Greenwood .... £3,014 0 0
W. Downs .... 2,917 0 0
Martin .... 2,909 0 0
J. H. Tarrant & Son .... 2,876 0 0
Tyerman .... 2,808 0 0

CHESHUNT.—For house and business premises at Cheshunt, for Mr. Woollard, ironmongery, &c. :—
Harrison & Crabb .... £1,088 0 0
Challis .... 1,078 0 0
Pavey .... 1,069 0 0
Saunders.... 887 0 0
Almond .... 850 0 0
Brooks & Meader.... 844 0 0
C. J. Boswell.... .... 830 0 0

DEWSBURY.—For building boundary-walls around the extension of the cemetery :—
Hart & Brier, Dewsbury (accepted) ... £425 11 10

ENFIELD.—For new school for girls and infants, for the Rev. Prebendary Hodson and Committee. Mr. C. Stuart Robertson, architect, Finsbury-pavement and Enfield :—
C. J. Boswell.... £607 0 0
Patman Bros. .... 597 0 0
Fairhead & Son .... 548 0 0
Brooks & Meader (accepted) .... 541 0 0

EXNING.—For new cottages at Exning, Suffolk, for Mr. Webb. Mr. John Flatman, architect, Newmarket :—
Smith .... £417 0 0
Simpson & Son.... 375 0 0
Cowell.... 355 0 0
Hook & Tebbitt .... 353 0 0
Linzell.... 339 0 0
Kerridge & Shaw, Cambridge* .... 285 0 0
* Accepted.

FOREST HILL.—For hall in connexion with St. James's Church, Stanstead-road, Forest Hill, for the trustees. Messrs. Tolley & Son, architects :—
Roberts .... £3,100 0 0
Bryan .... 2,870 0 0
Marriage.... 2,754 0 0
Gould & Brand .... 2,728 0 0
Waddington .... 2,093 15 0

GESTINGTHORPE.—For villa, Gestingthorpe, for Mr. A. D. Finch. Mr. G. H. Page, architect, Trinity-chambers, Colchester :—
Mason & Son, Haverhill .... £295 0 0
W. Wanford, Sudbury .... 292 0 0
Grimwood & Sons, Sudbury.... 288 0 0
J. Beard, Chappel (accepted).... 250 0 0

HACKNEY.—For alterations to No. 132, Mare-street, Hackney, and erection of new warehouse in rear, for Mr. Jefferson. Mr. T. Pickering, surveyor, Barnsbury :—
J. R. Long, Compton-street (accepted) £584 0 0

HORNSEY.—For shop fittings, for Mr. H. J. Kimbell, 381, Hornsey-road. Mr. J. E. Jears, architect :—
Drew & Cadman (accepted).... £505 0 0

ISLINGTON.—For alterations, shop fronts, and fittings, 18 and 18½, Upper-street, Islington, for Mr. C. Sergeant :—
W. Rendel (accepted) .... £145 0 0

LEWISHAM.—For building shop and dwelling-house, &c., for Mr. A. S. Tyers. Mr. Albert L. Guy, architect, High-street, Lewisham :—
S. J. Jerrard.... £1,193 0 0
Balaam Bros.... 1,150 0 0
D. & R. Kennard .... 1,070 0 0
H. Bridel .... 920 0 0
T. Knight (accepted) .... 879 0 0
H. Barber .... 820 0 0

LEWISHAM.—For building billiard-room for three tables, for the Lewisham Conservative Club. Mr. Albert L. Guy, architect :—
Balaam Bros. .... £460 0 0
H. Bridel .... 430 0 0
H. L. Holloway .... 428 0 0
S. J. Jerrard.... 398 0 0
H. Bennett .... 397 0 0
T. Knight (accepted).... 370 0 0

LONDON.—For alterations and part rebuilding of No. 7, Wigmore-street, Cavendish-square, for Mr. O. H. Hanson. Messrs. Alexander Payne and F. M. Elgood, joint architects :—
Perry & Co. .... £2,573 0 0
C. Cox .... 2,365 0 0
Longmire & Burge .... 2,363 0 0
G. H. & A. Bywaters .... 2,354 0 0
G. Shaw .... 2,347 0 0
T. Boyce.... 2,240 0 0
J. Woodward.... 2,220 0 0
H. Baylis .... 2,220 0 0
T. L. Green .... 2,148 0 0
Stimpson & Co. (accepted) .... 2,114 0 0

LONDON.—For proposed artisan dwellings, Golden lane. Mr. J. W. Cooley, architect :—
*Contract No. 1.—Foundations.*
W. Spencer, Bethnal Green .... £7,650 0 0
W. Manley, West Ham .... 7,400 0 0
F. Vokes, Balls Pond.... 7,050 0 0
W. Barnett, Olney-street, Walworth* 6,900 0 0
* Accepted.

LONDON.—For new shop front, for Mr. H. H. C. Williams, 284, Oxford-street. Mr. A. E. Hughes, architect, Mortimer-street :—
Drew & Cadman (accepted).... £225 0 0

LONDON.—For alterations and additions at 75, Rockingham-street, Newington. Messrs. George Lansdown & Harriss, architects, Warwick-street, Charing Cross :—
H. & E. Lea .... £1,693 0 0
Perry & Co. .... 1,680 0 0
Canning & Mullins .... 1,547 0 0
Tarrant & Son .... 1,528 0 0
W. Smith .... .... 1,433 0 0
G. Parker .... 1,419 0 0
W. & F. Croaker (accepted) .... 1,374 0 0

LONDON.—For erecting three houses in Brunswick-street, Blackfriars, for Mr. D. Isaacs and others. Mr. C. H. Flack, architect, Bedford-row :—

| | | Graining extra. | Total. |
|---|---|---|---|
| Beasley.... | £2,400 ..... | £120 ..... | £2,520 |
| Hoare .... | 2,367 ..... | 85 ..... | 2,452 |
| Mills .... | 2,290 ..... | 100 ..... | 2,390 |
| Downs .... | 2,290 ..... | 90 ..... | 2,380 |
| Clarke .... | 2,208 ..... | 103 ..... | 2,311 |
| Scrivener.... | 2,187 ..... | 122 ..... | 2,309 |
| Chant .... | 2,227 ..... | 80 ..... | 2,307 |
| Harris .... | 2,187 ..... | 92 ..... | 2,279 |
| Allard .... | 2,196 ..... | 56 ..... | 2,252 |
| Gatfield .... | 2,163 ..... | 30 ..... | 2,193 |
| Quirk .... | 2,068 ..... | 75 ..... | 2,143 |
| Exton .... | 2,029 ..... | 61 ..... | 2,090 |
| Manley.... | 1,977 ..... | 75 ..... | 2,052 |

LONDON.—Accepted for building the Beaconsfield Tavern and shop adjoining, for Mr. J. Kemp, Green-lanes, Finsbury Park. Messrs. Alexander & Gibon, architects, Great James-street, Bedford-row. Quantities by Mr. H. Burton, Furnival's Inn :—
J. Beale, Lanfrance-street, Westminster Bridge road .... £5,400 0 0
[No competition.]

LONDON.—For additions and repairs to No. 7, Half Moon-street, Piccadilly, for Mrs. Price. Mr. J. T. Wimperis, architect :—
Bush .... £693 0 0
Wetherilt, Lee, & Martin (accepted).. 647 0 0
Henderson.... 630 0 0

LONDON.—For additions and alterations, No. 36, Clarges-street, Piccadilly, for Mr. Hall. Mr. J. T. Wimperis, architect :—
W. & E. Curtiss .... £560 0 0
Wetherilt, Lee, & Martin.... 553 0 0
Bush .... 495 0 0

LONDON.—For alterations to the Crown and Six Cans public-house, 33, High Holborn, for Messrs. Pollyblank & Parr. Mr. T. Pickering, surveyor, Barnsbury :—

| | |
|---|---|
| J. R. Long, Compton-street (accepted) | £115 0 0 |

LONDON.—For pulling down and rebuilding No. 19, Middlesex-street, Aldgate, for Mr. L. Josephs. Mr. R. W. Holden, architect :—

| | |
|---|---|
| Elves | £515 0 0 |
| J. O. Richardson (accepted) | 500 0 0 |
| Howlett & Son | 491 0 0 |
| Moore | 385 0 0 |

LOUGHTON.—For construction of roads and sewers, to be called Queen's-road and New-road, on the Queen's Park Estate, Loughton, Essex. Messrs. E. E. Croucher & Co., surveyors, Chancery-lane :—

| | |
|---|---|
| Dunmore | £1,085 0 0 |
| Adams | 926 3 7 |
| Ford & Co. | 890 12 2 |
| French | 875 0 0 |
| Bell | 845 0 0 |

LOUGHTON.—For construction of sewer in the High-road, Loughton, Essex. Messrs. E. E. Croucher & Co., surveyors, Chancery-lane :—

| | |
|---|---|
| Ford & Co. | £309 0 0 |

NEWMARKET.—For alteration to shop in the High-street, Newmarket, for Mrs. Gilbert. Mr. John Flatman, architect, Newmarket :—

| | |
|---|---|
| Blyth & Hunt | £491 10 0 |
| Simpson, Son, & Smith | 478 10 0 |
| Kerridge & Shaw | 449 0 0 |
| Kent | 435 16 0 |
| Linsell, Newmarket (accepted) | 385 0 0 |

NEWMARKET.—For new house in Park-lane, Newmarket, for Mr. H. Peck, not including plumbing, painting and glazing, and ironwork. Mr. John Flatman, architect, Newmarket :—

| | |
|---|---|
| Smith | £953 0 0 |
| Simpson & Son | 940 0 0 |
| Kerridge & Shaw | 917 0 0 |
| Plummer | 815 0 0 |
| Cowell | 785 0 0 |
| Linsell | 709 0 0 |
| Blyth & Hunt, Newmarket (accepted) | 694 10 0 |

NEWPORT (Mon.).—For taking down present Ship and Pilot Hotel, and erecting new restaurant and business premises, for Mr. Walter J. Dix. Messrs. W. G. Habershon & Fawckner, architects, London, Newport, and Cardiff. Quantities by the architects :—

| | | Basement extra. |
|---|---|---|
| G. Martin | £2,535 0 0 | ... £33 10 0 |
| Moulton & Brownscombe | 2,220 0 0 | ... 36 0 0 |
| G. Wilkins | 2,200 0 0 | ... 33 0 0 |
| J. Linton | 2,196 0 0 | ... 34 8 0 |
| W. M. Blackburn | 2,193 0 0 | ... 29 0 0 |
| C. Miles | 2,120 0 0 | ... 31 0 0 |

[All of Newport.]

ORPINGTON.—For a private residence, with stables and cottage, at Scad's Hill, Orpington. Mr. St. Pierre Harris, architect and surveyor, Basinghall-street and Orpington :—

| | |
|---|---|
| T. Knight, Sidcup | £2,244 0 0 |
| J. Coleman, Poplar | 2,084 0 0 |
| F. Wood, Chislehurst | 2,073 0 0 |
| Somerford & Son, Clapham | 1,998 0 0 |
| N. & F. Croaker, Great Dover-street | 1,990 0 0 |
| Taylor & Son, Bromley (accepted) | 1,895 0 0 |

PORTSMOUTH.—Extension of temporary chancel and sacristy, Portsmouth Catholic Cathedral, for the Rev. Dr. John Virtue. Mr. Joseph Stanislaus Hansom, architect. Quantities by Mr. Henry Smith :—

| | |
|---|---|
| W. Ward (too late) | £1,581 0 0 |
| G. Burbridge | 1,549 0 0 |
| Lawrence | 1,493 0 0 |
| Light Bros. | 1,483 0 0 |
| Buckle & Wheeler | 1,466 0 0 |

RIPLEY (Surrey).—For the erection of a residence at Manor Cottage Farm, for Mr. James Johnston. Mr. William Stephens Cross, architect. Quantities by Mr. H. E. Pollard :—

| | |
|---|---|
| Mitchell Bros., Shalford | £3,100 0 0 |
| Clemence | 2,950 0 0 |
| Strudwick, Guildford | 2,921 0 0 |
| Rider & Son | 2,698 0 0 |
| Laing & Son | 2,672 0 0 |
| Whitburn, Woking | 2,600 0 0 |
| Macey & Son | 2,542 0 0 |
| Mackie, Camberwell | 2,297 0 0 |
| Wood, Cobham | 2,285 0 0 |

SEVENOAKS.—For alterations and additions to residence at Godden Green, near Sevenoaks, Kent, for Mr. Thomas L. Devitt. Mr. Fredk. M. Simpson, architect, Rolls-chambers, Chancery-lane. Quantities by Messrs. William Reddall & Son :—

| | | Alternative Estimate. |
|---|---|---|
| Wright, Westminster | £6,104 | ... £6,489 6 0 |
| Ashby & Horner, London | 5,994 | ... 6,270 0 0 |
| Hall, Beddall, & Co., London | 5,862 | ... 6,095 0 0 |
| G. Mansfield & Son, Tunbridge Wells | 5,538 | ... 6,000 0 0 |
| W. Willsher, Sevenoaks | 4,849 | ... 5,074 0 0 |
| G. Punnett & Sons, Tunbridge | 4,819 | ... 4,998 0 0 |

SOUTH STONEHAM.—For alterations and additions to infirmary and other works at Union Workhouse, West End, South Stoneham. Mr. W. H. Mitchell, architect, Southampton :—

| | |
|---|---|
| Honeychurch & Michelmore, Southampton | £3,610 13 10 |
| Wickham, Bitterne | 3,520 0 0 |
| Harvey, St. Deny's | 3,468 0 0 |
| Haines, West End | 3,412 0 0 |
| Stevens & Sons, Southampton | 3,329 0 0 |
| Musselwhite, Sholing | 3,312 0 0 |
| Dyer & Sons, Southampton | 3,200 0 0 |
| Bull & Sons, Southampton | 3,179 0 0 |
| Carden, Southampton | 3,091 0 0 |
| Crook & Sons, Southampton | 3,087 0 0 |
| Franklin, Portswood | 3,010 0 0 |
| Rowland, Southampton | 2,998 0 0 |
| Blake, Eastleigh | 2,997 0 0 |
| Witt, Bitterne* | 2,759 10 0 |

[Architect's protecting tender, 3,436*l.*]

* Accepted, subject to approval of the Local Government Board.

*Re alterations at* 31, *Finsbury-square, for the Royal Maternity Society.*—It was stated in our last issue that Messrs. J. Reddall & Son were the architects; but this should have been "Messrs. William Reddall & Son, Surveyors to the Charity." The list was printed as sent to us.

*SPECIAL NOTICE.*—*Lists* of Tenders frequently reach us too late for insertion. They should be delivered at our office, 46, Catherine-street, W.C., *not later than Four p.m.* on THURSDAYS.

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THE INDEX and TITLE-PAGE for Volume L. (Jan. to June, 1886) were given as a Supplement with the Number for July 17

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## TO CORRESPONDENTS.

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O. & R.—F. W. L.—W. F. P.—T. L. (we fear the arrangement will hardly suit us).—S. J. N.—D. & F.—"Nemo" (we believe the signature refers to the whole passage; but the extract was selected many years ago by our predecessor, and we cannot speak positively at the moment).—S. & A.—J. S.—C. C.—E. E. C. & Co.—R. S.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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